



UC Berkeley

**Long Range Development Plan and Housing Projects #1 and #2
Draft Environmental Impact Report
2021**

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Berkeley
UNIVERSITY OF CALIFORNIA

UC Berkeley

Long Range Development Plan and Housing Projects #1 and #2 Draft Environmental Impact Report 2021

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Table of Contents

1.	INTRODUCTION	1-1
1.1	Proposed Action	1-1
1.2	EIR Scope	1-2
1.3	Environmental Review Process	1-3
1.4	Tiering Process	1-5
2.	EXECUTIVE SUMMARY	2-1
2.1	Environmental Procedures	2-1
2.2	Summary of the Proposed Project	2-3
2.3	Summary of Project Alternatives	2-4
2.4	Issues to Be Resolved	2-5
2.5	Areas of Controversy	2-6
2.6	Summary of Impacts and Mitigation Measures	2-7
3.	PROJECT DESCRIPTION	3-1
3.1	Overview	3-1
3.2	Project Objectives	3-4
3.3	Regional Context	3-6
3.4	EIR Study Area	3-8
3.5	Components of the Proposed Project	3-10
3.6	Required Permits and Approvals	3-65
4.	ACRONYMS AND ABBREVIATIONS	4-1
5.	ENVIRONMENTAL ANALYSIS	5-1
	Chapter Organization	5-1
	Evaluation Methodology	5-2
5.1	Aesthetics	5-1-1
5.2	Air Quality	5-2-1
5.3	Biological Resources	5-3-1
5.4	Cultural Resources	5-4-1
5.5	Energy	5-5-1
5.6	Geology and Soils	5-6-1
5.7	Greenhouse Gas Emissions	5-7-1
5.8	Hazards and Hazardous Materials	5-8-1
5.9	Hydrology and Water Quality	5-9-1

TABLE OF CONTENTS

5.10	Land Use and Planning.....	5.10-1
5.11	Noise.....	5.11-1
5.12	Population and Housing.....	5.12-1
5.13	Public Services.....	5.13-1
5.14	Parks and Recreation.....	5.14-1
5.15	Transportation.....	5.15-1
5.16	Tribal Cultural Resources.....	5.16-1
5.17	Utilities and Service Systems.....	5.17-1
5.18	Wildfire.....	5.18-1
6.	ALTERNATIVES TO THE PROPOSED PROJECT.....	6-1
6.1	Introduction.....	6-1
6.2	Reasonable Range of Alternatives.....	6-2
6.3	Alternative A: No Project.....	6-10
6.4	Alternative B: Reduced Development Program.....	6-29
6.5	Alternative C: Reduced Vehicle Miles Traveled.....	6-44
6.6	Alternative D: Increased Faculty and Staff Housing.....	6-59
6.7	Environmentally Superior Alternative.....	6-75
7.	CEQA-REQUIRED ASSESSMENT CONCLUSIONS.....	7-1
7.1	Impacts Found Not to Be Significant.....	7-1
7.2	Significant and Unavoidable Impacts.....	7-5
7.3	Growth Inducement.....	7-8
7.4	Significant and Irreversible Changes.....	7-9
8.	ORGANIZATIONS AND PERSONS CONSULTED.....	8-1

Appendices

Appendices are available online at: <https://lrddp.berkeley.edu>

Appendix A:	Notice of Preparation and Scoping Comments
Appendix B:	UC Berkeley 2021 LRDP Continuing Best Practices
Appendix C:	Air Quality and Greenhouse Gas Emissions Data
Appendix D:	Health Risk Assessments
Appendix E:	Biological Resources Data
Appendix F:	Cultural Resources Data
Appendix G:	Energy Data
Appendix H:	Geology and Soils Data
Appendix I:	Hazardous Materials Data
Appendix J:	Noise Data
Appendix K:	Place of Residence Data

Appendix L:	Public Services Data
Appendix M:	Transportation Data

List of Figures

Figure 3-1	Regional and Vicinity Map	3-7
Figure 3-2	EIR Study Area	3-9
Figure 3-3	Potential Areas of New Development and Redevelopment	3-29
Figure 3-4	Potential Areas of Renovation	3-31
Figure 3-5	Housing Project #1 Site Aerial	3-36
Figure 3-6	Housing Project #1 Conceptual Site Plan Level 1	3-38
Figure 3-7	Housing Project #1 Conceptual Site Plan Level 2	3-39
Figure 3-8	Housing Project #1 Proposed North Elevation	3-40
Figure 3-9	Housing Project #1 Proposed East Elevation	3-41
Figure 3-10	Housing Project #1 Proposed South Elevation	3-42
Figure 3-11	Housing Project #1 Proposed West Elevation	3-43
Figure 3-12	Housing Project #1 Conceptual Landscape Plan	3-45
Figure 3-13	Housing Project #1 Conceptual Rooftop Plan	3-46
Figure 3-14	Housing Project #2 Site Aerial	3-52
Figure 3-15	Housing Project #2 Conceptual Site and Landscape Plan	3-55
Figure 3-16	Housing Project #2 Proposed North Building Height and Elevation Diagram	3-56
Figure 3-17	Housing Project #2 Proposed East Building Height and Elevation Diagram	3-57
Figure 3-18	Housing Project #2 Proposed South Building Height and Elevation Diagram	3-58
Figure 3-19	Housing Project #2 Proposed West Building Height and Elevation Diagram	3-59
Figure 5-1	Priority Development Areas and Transit Priority Areas	5-7
Figure 5.2-1	BAAQMD Impacted Communities Map	5.2-19
Figure 5.2-2	UC Berkeley Permitted Sources of Emissions	5.2-21
Figure 5.2-3	Existing Residential (30-Year) Cancer Risk Contours	5.2-23
Figure 5.2-4	CalEnviroScreen3.0 Cumulative Score by Percentile	5.2-25
Figure 5.2-5	UC Berkeley Off-Campus Sensitive Receptor Locations	5.2-26
Figure 5.2-6	LRDP Update Residential (30-year) Cancer Risk Contours	5.2-62
Figure 5.2-7	Project Site and Off-Site Receptor Locations of Housing Project #1 Construction HRA	5.2-66
Figure 5.2-8	Project Site and Off-Site Receptor Locations of Housing Project #2 Construction HRA	5.2-70
Figure 5.3-1	Vegetative Cover	5.3-10
Figure 5.3-2	Special-Status Plant Species	5.3-14
Figure 5.3-3	Special-Status Animal Species and Critical Habitat	5.3-15
Figure 5.3-4	National Wetlands Inventory Map	5.3-17
Figure 5.3-5	Housing Project #2 Tree Map	5.3-22
Figure 5.6-1	Geologic Map	5.6-9

TABLE OF CONTENTS

Figure 5.6-2	San Francisco Bay Area Faults	5.6-12
Figure 5.6-3	Hayward Fault Close-Up	5.6-16
Figure 5.6-4	Geologic Hazards	5.6-18
Figure 5.6-5	Landslide Map	5.6-19
Figure 5.9-1	Watersheds in the EIR Study Area	5.9-11
Figure 5.9-2	FEMA 100-Year Floodplain Map	5.9-19
Figure 5.11-1	Nearby Noise and Vibration-Sensitive Receptors: Housing Project #1	5.11-20
Figure 5.11-2	Nearby Noise and Vibration-Sensitive Receptors: Housing Project #2	5.11-20
Figure 5.15-1	Existing Transit Network	5.15-16
Figure 5.15-2	Existing Pedestrian Routes	5.15-22
Figure 5.15-3	Existing Pedestrian Volumes by Location	5.15-23
Figure 5.15-4	Existing Pedestrian Activity by Time of Day (Pedestrians Entering and Leaving the Campus Park)	5.15-24
Figure 5.15-5	UC Berkeley Campus Existing Bicycle Network	5.15-26
Figure 5.15-6	Existing Bicycle Volumes by Location	5.15-27
Figure 5.15-7	Existing Bicycle Activity by Time of Day (Bicyclists Entering and Leaving Campus Park)	5.15-28
Figure 5.15-8	Existing Vehicle Volumes by Location	5.15-30
Figure 5.15-9	Campus Park Perimeter Curb Designations	5.15-31
Figure 5.15-10	Existing TNC Activity	5.15-32
Figure 5.15-11	Existing Campus Park Fire Access Routes	5.15-34
Figure 5.15-12	Existing UC Berkeley Parking Facilities	5.15-38
Figure 5.15-13	Existing UC Berkeley Parking Occupancies	5.15-39
Figure 5.18-1	Fire Hazard Severity Zones	5.18-12
Figure 5.18-2	California Public Utilities Commission High Fire-Threat Districts	5.18-13
Figure 5.18-3	Wildland Urban Interface	5.18-15

List of Tables

Table 2-1	Impacts at a Glance	2-8
Table 2-2	Significant Impacts and Mitigation Measures for the Long Range Development Plan	2-10
Table 2-3	Significant Impacts and Mitigation Measures for Housing Project #1	2-34
Table 2-4	Significant Impacts and Mitigation Measures for Housing Project #2	2-44
Table 3-1	Proposed LRDP Update Buildout Projections	3-25
Table 3-2	Potential Areas of New Development and Redevelopment	3-27
Table 3-3	Potential Areas of Renovation Only	3-30
Table 3-4	Potential Surface Parking Conversion for Mobility Improvements and Open Space	3-32
Table 3-5	Proposed LRDP Update Housing Program	3-33
Table 3-6	Housing Project #1 Proposed Development	3-34

Table 3-7	Housing Project #2 Proposed Development.....	3-51
Table 5-1	City and Regional Population and Housing Projections.....	5-10
Table 5-2	Pending Projects in the City of Berkeley	5-11
Table 5-3	Pending UC Berkeley Projects	5-12
Table 5-4	Pending Lawrence Berkeley National Laboratory Projects	5-13
Table 5.2-1	Criteria Air Pollutant Health Effects Summary.....	5.2-4
Table 5.2-2	Ambient Air Quality Standards for Criteria Pollutants.....	5.2-7
Table 5.2-3	Attainment Status of Criteria Pollutants in the San Francisco Bay Area Air Basin.....	5.2-17
Table 5.2-4	Ambient Air Quality Monitoring Summary.....	5.2-18
Table 5.2-5	UC Berkeley 2018 Criteria Air Pollutant Emissions	5.2-20
Table 5.2-6	BAAQMD Regional (Mass Emissions) Criteria Air Pollutant Significance Thresholds.....	5.2-28
Table 5.2-7	Criteria Air Pollutant Emissions Forecast Analysis Methodology	5.2-32
Table 5.2-8	Construction Activities, Phasing, and Equipment: Housing Project #1.....	5.2-38
Table 5.2-9	Construction Activities, Phasing, and Equipment: Housing Project #2	5.2-39
Table 5.2-10	Control Measures from the BAAQMD 2017 Clean Air Plan	5.2-42
Table 5.2-11	Comparison of the Change in Population and VMT in the EIR Study Area	5.2-44
Table 5.2-12	UC Berkeley LRDP 2036 Forecast	5.2-50
Table 5.2-13	Cogeneration Plant Emissions Reductions from Implementation of the Campus Energy Plan	5.2-51
Table 5.2-14	Housing Project #1 Construction-Related Criteria Air Pollutant Emissions Estimates.....	5.2-54
Table 5.2-15	Housing Project #1 Operational Emissions (Year 2024)	5.2-56
Table 5.2-16	Housing Project #2 Construction-Related Criteria Air Pollutant Emissions Estimates.....	5.2-57
Table 5.2-17	Housing Project #2 Operational Emissions (Year 2024).....	5.2-59
Table 5.2-18	LRDP Update Operational Health Risk Assessment Results.....	5.2-63
Table 5.2-19	Housing Project #1 Construction Health Risk Assessment Results: without Mitigation.....	5.2-65
Table 5.2-20	Housing Project #1 Construction Health Risk Assessment Results: with Mitigation.....	5.2-67
Table 5.2-21	Housing Project #2 Construction Health Risk Assessment Results: without Mitigation.....	5.2-69
Table 5.2-22	Housing Project #2 Construction Health Risk Assessment Results: with Mitigation	5.2-71
Table 5.2-23	BAAQMD Odor Screening Distances	5.2-73
Table 5.2-24	Cumulative Operational Health Risk Assessment Results	5.2-76
Table 5.4-1	National Historic Resource Listings	5.4-14
Table 5.4-2	California Historic Resource Listings.....	5.4-16
Table 5.4-3	Local Historic Resource Listings.....	5.4-17
Table 5.4-4	Resources Found Eligible through Previous Survey Evaluation	5.4-18
Table 5.4-5	Pre-World War II Evaluated Resources	5.4-20
Table 5.4-6	Post-World War II Evaluated Resources	5.4-20

TABLE OF CONTENTS

Table 5.4-7	Housing Project #1 Site Historic Significance	5.4-25
Table 5.4-8	Designated Historic Resources Identified as Potential Areas of Redevelopment or Renovation	5.4-32
Table 5.4-9	Eligible Resources Identified as Potential Redevelopment or Renovation Projects	5.4-33
Table 5.4-10	Potentially Eligible Resources Identified as Potential Redevelopment or Renovation Projects.....	5.4-33
Table 5.5-1	UC Berkeley 2020 Sustainability Plan Goals.....	5.5-8
Table 5.5-2	Existing Nontransportation Energy Demand.....	5.5-13
Table 5.5-3	Existing Baseline Year 2018 Transportation Energy Demand.....	5.5-14
Table 5.5-4	LRDP Update Nontransportation Energy Demand	5.5-17
Table 5.5-5	LRDP Update Transportation Energy Demand.....	5.5-19
Table 5.5-6	Construction-Related Fuel Usage: Housing Project #1	5.5-23
Table 5.5-7	Project Annual Electricity Consumption: Housing Project #1.....	5.5-24
Table 5.5-8	Project Annual Operation-Related Fuel Usage: Housing Project #1.....	5.5-25
Table 5.5-9	Construction-Related Fuel Usage: Housing Project #2.....	5.5-26
Table 5.5-10	Project Annual Electricity Consumption: Housing Project #2	5.5-27
Table 5.5-11	Project Annual Operation-Related Fuel Usage: Housing Project #2	5.5-27
Table 5.6-1	Number of Project Geotechnical Reports on Spreadsheet for Each LRDP Zone	5.6-7
Table 5.6-2	Groundwater Depths	5.6-11
Table 5.6-3	Distances and Directions to Active Faults	5.6-13
Table 5.6-4	Earthquake Probabilities in 2016	5.6-14
Table 5.7-1	GHG Emissions and Their Relative Global Warming Potential Compared to CO ₂	5.7-3
Table 5.7-2	Summary of GHG Emissions Risk to California	5.7-6
Table 5.7-3	2017 Climate Change Scoping Plan Emissions Reductions Gap to Achieve the 2030 GHG Target	5.7-13
Table 5.7-4	2017 Climate Change Scoping Plan Emissions by Sector to Achieve the 2030 GHG Target	5.7-13
Table 5.7-5	List of Other Applicable State GHG Regulations.....	5.7-15
Table 5.7-6	UC Berkeley 2020 Sustainability Plan Goals.....	5.7-19
Table 5.7-7	UC Berkeley GHG Emissions.....	5.7-27
Table 5.7-8	GHG Emissions Forecast Analysis Methodology	5.7-30
Table 5.7-9	UC Berkeley LRDP GHG Emissions Forecast	5.7-35
Table 5.7-10	UC Berkeley LRDP GHG Emissions 2036 Forecast: Carbon Neutrality Threshold	5.7-39
Table 5.8-1	Hazardous Material Sites in and Adjacent to the EIR Study Area.....	5.8-23
Table 5.9-1	Construction Best Management Practices.....	5.9-24
Table 5.11-1	Typical Noise Levels	5.11-4
Table 5.11-2	Human Reaction to Typical Vibration Levels	5.11-5
Table 5.11-3	City of Berkeley Land Use Compatibility for Community Noise Environments.....	5.11-12
Table 5.11-4	Exterior Noise Limits: City of Berkeley	5.11-13
Table 5.11-5	Maximum Construction Noise Levels (dBA L _{max}): City of Berkeley.....	5.11-14
Table 5.11-6	Maximum Allowable Noise Level Standards (dBA): City of Oakland.....	5.11-15

Table 5.11-7	Maximum Construction Noise Levels (dBA L _{max}): City of Oakland	5.11-15
Table 5.11-8	Existing Traffic Noise: EIR Study Area	5.11-16
Table 5.11-9	FTA Groundborne Vibration Potential Annoyance Criteria	5.11-24
Table 5.11-10	FTA Groundborne Vibration Architectural Damage Criteria	5.11-24
Table 5.11-11	Traffic Noise Increases: EIR Study Area	5.11-26
Table 5.11-12	Construction Equipment Noise Emission Levels (dBA L _{max})	5.11-30
Table 5.11-13	Traffic Noise Increases: Housing Project #1	5.11-33
Table 5.11-14	HVAC Mechanical Noise Levels at Nearby Sensitive Receptors: Housing Project #1	5.11-36
Table 5.11-15	Construction Noise Levels at Nearby Receptors (dBA L _{max}): Housing Project #1	5.11-38
Table 5.11-16	Traffic Noise Increases: Housing Project #2	5.11-39
Table 5.11-17	HVAC Mechanical Noise at Nearby Sensitive Receptors: Housing Project #2	5.11-42
Table 5.11-18	Construction Noise Levels at Nearby Receptors (dBA L _{max}): Housing Project #2	5.11-44
Table 5.11-19	Reference Vibration Levels for Construction Equipment	5.11-45
Table 5.11-20	Vibration Levels (PPV) from Typical Construction Equipment: Housing Project #1	5.11-49
Table 5.11-21	Vibration Levels (VdB) of Project Construction Equipment: Housing Project #1	5.11-50
Table 5.11-22	Vibration Levels for Impact Pile Driving Activity: Housing Project #2	5.11-52
Table 5.11-23	Vibration Levels for Grading Equipment: Housing Project #2	5.11-53
Table 5.11-24	Vibration Levels (VdB) of Project Construction Equipment: Housing Project #2	5.11-54
Table 5.12-1	City and Regional Population (2010 to 2037)	5.12-7
Table 5.12-2	UC Berkeley Student and Employee Population (2018 to 2037)	5.12-9
Table 5.12-3	Place of Residence	5.12-10
Table 5.12-4	City and Regional Housing (2010 to 2020)	5.12-11
Table 5.12-5	Existing UC Berkeley Housing in the EIR Study Area	5.12-12
Table 5.12-6	City and Regional Employment (2010 to 2037)	5.12-13
Table 5.12-7	Projected Housing Changes in the EIR Study Area	5.12-16
Table 5.12-8	Projected Population Increase Due to Housing Production	5.12-17
Table 5.12-9	UC Berkeley Population Compared to UC Berkeley Housing in the EIR Study Area	5.12-19
Table 5.12-10	Unaccommodated UC Berkeley Population and Associated Household Population	5.12-20
Table 5.12-11	Change in Unaccommodated UC Berkeley Population Residing in Nearby Jurisdictions	5.12-21
Table 5.13-1	Berkeley Unified School District Enrollment Data	5.13-23
Table 5.15-1	AC Transit Operations	5.15-15
Table 5.15-2	Bear Transit Shuttle Operations	5.15-17
Table 5.15-3	Existing UC Berkeley Transportation Demand Management Program Elements	5.15-18
Table 5.15-4	Existing UC Berkeley Population Commute Mode Shares	5.15-19
Table 5.15-5	Baseline UC Berkeley VMT Summary	5.15-35
Table 5.15-6	Baseline UC Berkeley VMT Rates and Regional VMT Rates	5.15-36
Table 5.15-7	Population and Beds Summary	5.15-46
Table 5.15-8	Commuters and Residents Summary	5.15-46

TABLE OF CONTENTS

Table 5.15-9	Baseline plus Project VMT Summary	5.15-55
Table 5.15-10	Baseline plus Project VMT Significance Determination	5.15-55
Table 5.15-11	Cumulative Plus Project VMT Summary	5.15-64
Table 5.15-12	Cumulative Plus Project VMT Significance Determination.....	5.15-64
Table 5.17-1	Existing Water Demand: 2018 Water Usage Data.....	5.17-13
Table 5.17-2	Increase in Water Demand: LRDP Update Buildout.....	5.17-14
Table 5.17-3	Water Demand vs Supply: Year 2035.....	5.17-15
Table 5.17-4	Increase in Water Demand: Housing Project #1	5.17-17
Table 5.17-5	Increase in Water Demand: Housing Project #2.....	5.17-18
Table 5.17-6	Increase in Wastewater Demand: LRDP Update Buildout.....	5.17-33
Table 5.17-7	Increase in Wastewater Demand: Housing Project #1	5.17-36
Table 5.17-8	Increase in Wastewater Demand: Housing Project #2	5.17-36
Table 5.17-10	Material Streams Disposal Destinations.....	5.17-56
Table 5.17-11	Proposed Student, Staff, and Faculty Projections.....	5.17-59
Table 5.17-12	Proposed Student, Staff, and Faculty Projections: Housing Projects #1 and #2	5.17-60
Table 6-1	Forecasted Net Growth Comparison of the Proposed Project and Alternatives to the Proposed Project	6-9
Table 6-2	Forecasted Net Growth Comparison of the Proposed Project and Alternative A.....	6-11
Table 6-3	Forecasted Net Growth Comparison of the Proposed Project and Alternative B.....	6-29
Table 6-4	Forecasted Net Growth Comparison of the Proposed Project and Alternative C.....	6-45
Table 6-5	Forecasted Net Growth Comparison of the Proposed Project and Alternative D.....	6-60
Table 6-6	Comparison of Impacts of the Proposed Project and the Project Alternatives.....	6-77
Table 6-7	Comparison of Objectives of the Proposed Project and the Project Alternatives	6-78
Table 7-1	Significant and Unavoidable Impacts by Project Component.....	7-6

1. Introduction

Pursuant to the California Environmental Quality Act (CEQA) Guidelines Section 15378[a], the University of California, Berkeley (UC Berkeley) 2021 Long Range Development Plan (LRDP Update) and Housing Projects #1 and #2 proposal is considered a “project” subject to environmental review. Combined, these three components are referred to as the “proposed project.” The implementation of the proposed project is “an action [undertaken by a public agency] which has the potential for resulting in either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment.” This Draft Environmental Impact Report (Draft EIR) provides an assessment of the potential environmental impacts of approval and implementation of the proposed LRDP Update and construction and operation of Housing Projects #1 and #2.

UC Berkeley is part of the University of California (UC), a constitutionally created entity of the State of California with “full powers of organization and government” (California Constitution Article IX, Section 9). As a constitutionally created State entity, the UC is not subject to local land use policies, such as those that may be found in the City of Berkeley General Plan or land use ordinances, whenever using property under its control in furtherance of its educational purposes. Although there is no formal mechanism for doing so, UC Berkeley may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the UC Berkeley campus.

This Draft EIR compares the development potential of the proposed project with the existing baseline condition that is described in detail in each section of Chapter 5, Environmental Analysis, of this Draft EIR. This Draft EIR identifies mitigation measures and alternatives to the proposed project that would avoid or reduce potentially significant impacts. The Board of Regents of the University of California (the Regents) is the lead agency for the proposed project. This assessment is intended to inform the Regents, UC Berkeley’s decision-makers, responsible agencies, and the public at large of the nature of the proposed project and its potential effect on the environment.

1.1 PROPOSED ACTION

If approved by the Regents, the proposed project would include the following three components:

1. **LRDP Update:** The proposed project would replace UC Berkeley’s existing LRDP, which was evaluated in the certified EIR¹ for a horizon year of 2020. The proposed LRDP Update would guide land use and capital investment decisions for UC Berkeley to meet its future academic goals and objectives. A

¹ University of California, Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, 2004, State Clearinghouse Number 2003082131.

buildout horizon year of the 2036–37 academic year is used to provide a basis for evaluating associated environmental impacts in this EIR. The proposed LRDP Update does not determine future UC Berkeley enrollment or population, or set a future population limit for UC Berkeley, but guides land development and physical infrastructure to support enrollment projections and activities coordinated by the University of California Office of the President. The proposed LRDP Update, like the current LRDP, does not commit UC Berkeley to any specific project, but provides a strategic framework for decisions on those projects. The development program does, however, establish a maximum amount of net new growth in UC Berkeley’s space inventory during this time frame, which the UC Berkeley campus may not substantially exceed without amending the LRDP and conducting additional environmental review, as necessary. The proposed LRDP Update planning projection for the UC Berkeley population is 48,200 students and 19,000 faculty and staff in the in the 2036-37 academic year. The LRDP Update’s proposed development program includes approximately 8,096,249 net new gross square feet of academic life, campus life, residential, and parking spaces, including approximately 11,073 student beds and 549 faculty and staff beds (see Table 3-1, Proposed LRDP Update Buildout Projections, and Table 3-5, Proposed LRDP Update Housing Program, respectively, in Chapter 3, Project Description, of this Draft EIR).

2. **Housing Project #1:** The proposed project would include the construction and operation of Housing Project #1, which would account for approximately 770 beds for UC Berkeley students in the proposed LRDP Update housing needs as well as campus life amenities and public commercial and office space (see Table 3-6, Housing Project #1 Proposed Development, in Chapter 3, Project Description).
3. **Housing Project #2:** The proposed project would include the construction and operation of Housing Project #2, which would include approximately 1,179 beds for UC Berkeley students and 8 beds for UC Berkeley faculty/staff in the proposed LRDP Update housing needs, approximately 125 affordable and supportive beds for UC Berkeley– and non-UC Berkeley–affiliated residents, a clinic, and public retail and open space (see Table 3-7, Housing Project #2 Proposed Development, in Chapter 3, Project Description).

1.2 EIR SCOPE

CEQA and the CEQA Guidelines allow lead agencies to prepare different types of EIRs for varying situations. CEQA Guidelines Section 15161 states that project EIRs are appropriate for examining the environmental impacts of a specific development project. CEQA Guidelines Section 15168 states that program EIRs are appropriate when a project consists of a series of actions related to the issuance of rules, regulations, and other planning criteria. This Draft EIR consists of both a program-level analysis of the potential impacts from the approval and implementation of the proposed LRDP Update pursuant to CEQA Guidelines Section 15168 as well as project-specific environmental review to analyze the potential impacts of the site-specific construction and operation for the Housing Projects #1 and #2 pursuant to CEQA Guidelines Section 15161.

According to CEQA Guidelines Section 15146(b), an EIR on a construction project necessarily will be more detailed in the specific effects of the project than will an EIR on the approval of an LRDP or the adoption of a local general plan because the effects of the construction can be predicted with greater accuracy.

The environmental evaluation of the proposed LRDP Update is programmatic. Assessment of potential environmental impacts is based on the various components of the LRDP Update that are required for its implementation. The program EIR addresses the proposed LRDP Update's potential environmental impacts as specifically and comprehensively as is reasonably possible. Consistent with CEQA, subsequent projects that are consistent with the proposed LRDP Update will be reviewed to determine whether they are within the scope of the Program EIR. If no new significant effects would occur, and no previously identified significant impacts are made substantially more severe, additional environmental analysis would not be required. If a subsequent activity would have effects that are not within the scope of the program EIR, an additional CEQA document (e.g., addendum, subsequent or supplemental EIR, or mitigated negative declaration) would be prepared by tiering from the program EIR and focusing on addressing those significant effects.

In addition to programmatic review of the proposed LRDP Update, this EIR evaluates two individual development projects within the LRDP Update: Housing Projects #1 and #2. These two projects are analyzed at the project level, allowing for project approval following certification of the EIR. As stated above, potential future development from implementation of the proposed LRDP Update, on the other hand, may be required to undergo additional CEQA analysis to disclose impacts particular to a specific project or project site that are not currently known and, thus, cannot be evaluated at this time.

1.3 ENVIRONMENTAL REVIEW PROCESS

1.3.1 DRAFT EIR

In compliance with CEQA Section 21080.4, UC Berkeley circulated a Notice of Preparation (NOP) of an EIR for the proposed project to the Office of Planning and Research State Clearinghouse and interested agencies and persons on April 7, 2020, for a 39-day review period. A virtual public Scoping Meeting was held on April 27, 2020, at 6:30 p.m. The Scoping Meeting was online rather than in person because of the expanding outbreak of COVID-19 and restrictions on in-person gatherings throughout California. The NOP and scoping process solicited comments from responsible and trustee agencies and interested parties regarding the scope of the Draft EIR. Appendix A, Notice of Preparation and Scoping Comments, of this Draft EIR contains the NOP and comments received by UC Berkeley in response to the NOP. See Chapter 2, Executive Summary, for a list of common responses. A copy of each comment letter is included in Appendix A, Notice of Preparation and Scoping Comments, of this Draft EIR.

This Draft EIR will be available for review by the public and interested parties, agencies, and organizations for a 45-day comment period starting March 8, 2021, and ending April 21, 2021. During the comment period, an online public hearing will be held on the evening of March 29, 2021 and the public is invited to provide at this hearing or provide written comments via mail or email on the Draft EIR to UC Berkeley by 5:00 p.m. on April 21, 2021 at the contact information shown below.

1. INTRODUCTION

Written: UC Berkeley, Physical & Environmental Planning

Attention: 2021 LRDP and Housing Projects #1 and #2 Draft EIR

300 A&E Building

Berkeley, CA 94720-1382

Phone: (510) 643-4793

Email: planning@berkeley.edu with “*Draft EIR Comments: 2021 LRDP and Housing Projects #1 and #2*” as the subject line.

1.3.2 FINAL EIR AND MITIGATION MONITORING

Upon completion of the 45-day review period for the Draft EIR, UC Berkeley will review all written comments received and prepare written responses to comments raising significant environmental issues. A Final EIR will then be prepared, which will contain all of the comments received, responses to those comments, and any revisions to the Draft EIR. All those who submitted comments on the Draft EIR will be notified of the availability of the Final EIR and the date of the Regent’s public hearing to consider approval of the Final EIR and proposed project.

All responses to comments submitted on the Draft EIR by public agencies will be provided to those agencies at least 10 days prior to certification of the EIR. The Final EIR (consisting of this Draft EIR and the response to comments document) will then be considered for certification by the Regents. If the Regents find that the Final EIR is “adequate and complete,” they may certify the Final EIR in accordance with CEQA and then consider project approval.

CEQA requires that when a public agency approves a project covered by an EIR, the public agency must adopt a reporting or monitoring program for the measures it has adopted or made a condition of the project approval to mitigate significant adverse effects on the environment. The reporting or monitoring program must be designed to ensure compliance during project implementation. The mitigation monitoring and reporting programs for the project components (LRDP Update, Housing Project #1, and Housing Project #2) will be prepared and considered by the Regents in conjunction with the Final EIR review.

In some cases, the Regents may find that certain mitigation measures are outside the jurisdiction of UC Berkeley to implement, or that no feasible mitigation measures have been identified for a given significant impact, or that the efficacy of a mitigation measure may be uncertain or not sufficient to reduce the significant impact to less than significant. In those cases, to approve the project, the Regents would have to adopt a statement of overriding considerations if they determine that economic, legal, social, technological, or other benefits of the proposed project outweigh the unavoidable, significant effects on the environment.

1.4 TIERING PROCESS

As stated above, this EIR includes both a program-level evaluation of the proposed LRDP Update and a project level evaluation of Housing Projects #1 and #2. CEQA includes several provisions to streamline the environmental review of qualified projects based on several factors.

The CEQA concept of “tiering” refers to the evaluation of general environmental matters in a broad program-level EIR, with subsequent focused environmental documents for individual projects. CEQA and the CEQA Guidelines encourage the use of tiered environmental documents to reduce delays and excessive paperwork in the environmental review process. This is accomplished in tiered documents by eliminating repetitive analyses of issues that were adequately addressed in the program EIR and by incorporating those analyses by reference.

CEQA Guidelines Section 15168(d) provides for simplifying the preparation of environmental documents by incorporating by reference analyses and discussions in the program EIR. Where an EIR has been prepared or certified for a program or plan, the environmental review for a later activity consistent with the program or plan should be limited to effects that were not analyzed as significant in the prior EIR or that are susceptible to substantial reduction or avoidance (CEQA Guidelines Section 15152[d]).

When tiering from the program EIR, the environmental analysis for a future project implementing the proposed LRDP Update would rely on the program EIR for the following:

1. A discussion of general background and setting information for environmental topic areas;
2. Overall growth-related issues;
3. Issues that were evaluated in sufficient detail in the program EIR for which there is no significant new information or change in circumstances that would require further analysis;
4. Assessment of cumulative impacts; and
5. Mitigation measures adopted and incorporated into the proposed project.

As previously stated, an Initial Study could be prepared for future projects (other than Housing Projects #1 and #2) to evaluate the potential environmental impacts of the future projects with respect to the program EIR to determine what level of additional environmental review, if any, is appropriate. Because this EIR analyzes the Housing Projects #1 and #2 at a project level, no further environmental review of these two projects is anticipated prior to project approval.

1. INTRODUCTION

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2. Executive Summary

This chapter presents an overview of the UC Berkeley 2021 LRDP Update and Housing Projects #1 and #2 Project, herein collectively referred to as the “proposed project.” This chapter provides a summary of the alternatives to the proposed project and identifies issues to be resolved, areas of controversy, and conclusions of the analysis in Chapters 5.1 through 5.18 of this Draft EIR. For a complete description of the proposed project, see Chapter 3, Project Description, and for a discussion of alternatives to the proposed project, see Chapter 6, Alternatives to the Proposed Project, of this Draft EIR.

This Draft EIR addresses the environmental effects associated with adoption and implementation of the proposed project. The California Environmental Quality Act (CEQA) requires that public agencies, prior to taking action on projects over which they have discretionary approval authority, consider the environmental consequences of such projects. An EIR is a public document designed to provide lead agencies, other local and State governmental agency decision-makers, and the public with an analysis of potential environmental consequences of a proposed project to support informed decision-making.

This Draft EIR has been prepared pursuant to the requirements of CEQA¹ and the State CEQA Guidelines² to determine if approval of the identified discretionary actions and related subsequent development could have a significant impact on the environment. The Board of Regents of the University of California (the Regents), as the lead agency, has reviewed and revised as necessary all submitted drafts, technical studies, and reports to reflect its own independent judgment, including reliance on applicable UC Berkeley technical personnel and review of all technical reports. Information for this Draft EIR was obtained from on-site field observations; analysis of adopted plans and policies; review of available studies, reports, data, and similar literature in the public domain; and specialized environmental assessments.

UC Berkeley is part of the University of California (UC), a constitutionally created entity of the State of California with “full powers of organization and government” (California Constitution Article IX, Section 9). As a constitutionally created State entity, the UC is not subject to the regulations of local non-state agencies, such as those that may be found in the City of Berkeley General Plan or land use ordinances, for uses on property owned or controlled by the UC that are in furtherance of the UC’s educational purposes. Although there is no formal mechanism for doing so, UC Berkeley may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the UC Berkeley campus.

2.1 ENVIRONMENTAL PROCEDURES

This Draft EIR has been prepared to assess the environmental effects associated with implementation of the proposed project. The main objectives of this document as established by CEQA are:

¹ The CEQA Statute is found at California Public Resources Code, Division 13, Sections 21000-21177.

² The CEQA Guidelines are found at California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387.

2. EXECUTIVE SUMMARY

- To disclose to decision-makers and the public the significant environmental effects of proposed activities implementing the proposed LRDP Update.
- To identify ways to avoid or reduce environmental damage.
- To prevent environmental damage by requiring implementation of feasible alternatives or mitigation measures.
- To disclose to the public reasons for agency approval of projects with significant environmental effects.
- To foster interagency coordination in the review of projects.
- To enhance public participation in the planning process.
- To satisfy CEQA requirements.

An EIR is the most comprehensive form of environmental documentation identified in the CEQA statute and in the CEQA Guidelines. It provides the information needed to assess the environmental consequences of a proposed project, to the extent feasible. EIRs are intended to provide an objective, factually supported, good faith effort of full-disclosure analysis of the environmental consequences associated with a proposed project that has the potential to result in significant, adverse environmental impacts. An EIR is also one of various decision-making tools used by a lead agency to consider the merits and disadvantages of a project that is subject to its discretionary authority. Prior to approving a proposed project, the lead agency must consider the information in the EIR, determine whether the EIR was properly prepared in accordance with CEQA and the CEQA Guidelines, determine that it reflects the independent judgment of the lead agency, adopt findings concerning the project's significant environmental impacts and alternatives, and adopt a statement of overriding considerations if the proposed project would result in significant impacts that cannot be avoided.³

2.1.1 REPORT ORGANIZATION

This Draft EIR is organized into the following chapters:

- **Chapter 1: Introduction.** Provides an overview of the Draft EIR document.
- **Chapter 2: Executive Summary.** Summarizes environmental consequences that would result from implementation of the proposed project, describes recommended mitigation measures, and indicates the level of significance of environmental impacts with and without mitigation.
- **Chapter 3: Project Description.** Describes the proposed project, including the location and boundaries, characteristics, objectives, and the structural and technical elements of the proposed action as well as the EIR's intended uses.
- **Chapter 4: Acronyms and Abbreviations.** Lists the common acronyms and abbreviations found in this Draft EIR.
- **Chapter 5: Environmental Evaluation.** Includes a topic-specific analysis of environmental impacts that would result from project implementation. This analysis is organized into 18 sub-chapters consistent with Appendix G of the CEQA Guidelines, each of which includes a discussion of the environmental and regulatory setting, impact analysis, and feasible mitigation measures. This chapter also provides information regarding cumulative impacts that would result from project implementation.

³ CEQA Guidelines Section 15093.

- **Chapter 6: Alternatives to the Proposed Project.** Describes alternatives to the proposed project, including the CEQA-required “No Project” Alternative and “Environmentally Superior Alternative” and the consequences of implementing these alternatives.
- **Chapter 7: CEQA-Required Assessment Conclusions.** Discusses growth inducement, unavoidable significant effects, and significant irreversible changes as a result of the proposed project.
- **Chapter 8: Organizations and Persons Consulted.** Lists the people and organizations that were contacted during preparation of this EIR.
- **Appendices:** The appendices for this document contain the following supporting documents:
 - Appendix A: Notice of Preparation and Scoping Comments
 - Appendix B: UC Berkeley 2021 LRDP Continuing Best Practices
 - Appendix C: Air Quality and Greenhouse Gas Emissions Data
 - Appendix D: Health Risk Assessments
 - Appendix E: Biological Resources Data
 - Appendix F: Cultural Resources Data
 - Appendix G: Energy Data
 - Appendix H: Geology and Soils Data
 - Appendix I: Hazardous Materials Data
 - Appendix J: Noise Data
 - Appendix K: Place of Residence Data
 - Appendix L: Public Services Data
 - Appendix M: Transportation Data

2.1.2 TYPE AND PURPOSE OF THIS DRAFT EIR

The CEQA Guidelines describe the types of EIRs that are used for different situations. As described in Chapter 1, Introduction, pursuant to CEQA Guidelines Section 15168, this Draft EIR analyzes the potential impacts from the adoption and implementation of the proposed LRDP Update at a program level, and pursuant to CEQA Guidelines Section 15161, this Draft EIR analyzes the potential impacts from the construction and operation of Housing Projects #1 and #2 at a project level.

2.2 SUMMARY OF THE PROPOSED PROJECT

The proposed project would include the following three components:

1. **LRDP Update:** The proposed project would replace UC Berkeley’s existing LRDP, which was evaluated in the certified EIR⁴ for a horizon year of 2020. The proposed LRDP Update would guide land use and capital investment decisions for UC Berkeley to meet its academic goals and objectives moving forward. A buildout horizon year of the 2036–37 school year is used to provide a basis for evaluating associated environmental impacts in this EIR. The proposed LRDP Update does not determine future UC Berkeley enrollment or population, or set a future population limit for UC Berkeley, but guides land development and physical infrastructure to support enrollment projections and activities coordinated by University

⁴ University of California, Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, 2004, State Clearinghouse Number 2003082131.

of California Office of the President (UCOP). The proposed LRDP Update, like the current LRDP, does not commit UC Berkeley to any specific project, but provides a strategic framework for decisions on those projects. The development program does, however, establish a maximum amount of net new growth in UC Berkeley's space inventory during this time frame, which the UC Berkeley campus may not substantially exceed without amending the LRDP. The proposed LRDP Update planning projection for the UC Berkeley population is 48,200 students and 19,000 faculty and staff in the 2036–37 academic year. The LRDP Update proposed development program includes approximately 8,096,249 gross square feet of academic life, campus life, residential, and parking spaces, including approximately 11,073 student beds and 549 employee housing units (see Table 3-1, Proposed LRDP Update Buildout Projections, and Table 3-5, Proposed LRDP Update Housing Program, respectively, in Chapter 3, Project Description, of this Draft EIR).

2. **Housing Project #1:** The 0.92-acre site is located in the City Environs Properties and is across Oxford Street to the west of the Campus Park in Downtown Berkeley. The proposed Housing Project #1, also known as the Helen Diller Anchor House or Anchor House, would involve the demolition of all the existing on-site structures and the construction and operation of a new 16-story (14 above ground and 2 below-ground levels) mixed-use building with a combination of residential, campus life, and uses not operated by UC Berkeley. The proposed Housing Project #1 would include student housing (approximately 770 beds), campus life space (approximately 20,000 square feet), and ground-floor commercial (approximately 17,000 square feet). See Table 3-6, Housing Project #1 Proposed Development, in Chapter 3, Project Description.
3. **Housing Project #2:** The 2.8-acre site is located in the City Environs Properties three blocks south (0.2 miles) of the Campus Park at 2556 Haste Street. The proposed Housing Project #2, also known as People's Park, would involve the demolition of the existing on-site structures and park amenities, and the construction and operation of two new mixed-use buildings with a combination of residential, campus life, academic life, and uses not operated by UC Berkeley. The proposed student housing building would include student and faculty/staff housing (approximately 1,187 beds), campus life space (approximately 12,000 square feet), and ground-floor public space (approximately 3,500 square feet). The affordable and supportive housing building would include affordable and supporting housing (approximately 125 beds) for UC Berkeley- and non-UC Berkeley-affiliated residents, and academic life space for a clinic (approximately 7,000 square feet). The project site would include 82,000 square feet of open space with amenities. See Table 3-7, Housing Project #1 Proposed Development in Chapter 3, Project Description.

2.3 SUMMARY OF PROJECT ALTERNATIVES

This Draft EIR analyzes alternatives to the proposed project that are designed to reduce the significant environmental impacts of the proposed project and feasibly attain most of the proposed project's basic objectives. There is no set methodology for comparing the alternatives or determining the environmentally superior alternative under CEQA. Identification of the environmentally superior alternative involves the lead agency (the Regents) weighing and balancing all of the environmental resource areas. The following alternatives to the proposed project were considered and analyzed in detail:

- **Alternative A. No Project:** This alternative would involve the continued implementation of the current LRDP. Planned growth as expressed in the current LRDP would continue up to its planned capacity,

which could result in up to 1,530 additional beds, and 2,476,929 square feet of academic life and campus life space. Alternative A would not include development of Housing Projects #1 or #2, and these sites would remain as is under existing conditions.

- **Alternative B. Reduced Development Program:** Under this alternative, UC Berkeley would implement a long-range development plan with a 25 percent reduction in undergraduate beds and academic life square footage. Under this alternative, housing for approximately 6,756 undergraduate students and 1,713,441 square feet of new academic space would be provided, compared to 9,008 undergraduate student beds and 2,284,588 square feet of new academic space under the proposed LRDP Update. In total, Alternative B would provide 9,479 net new beds (6,756 undergraduate + 2,065 graduate + 549 faculty staff + 109 non-university). Housing Project #1 would provide housing for approximately 578 students (compared to 770 under the proposed LRDP Update) and Housing Project #2 would provide housing for up to 885 students (compared to 1,179 under the proposed LRDP Update). In total, Housing Project #2 would provide 1,018 beds (885 undergraduate + 8 faculty/staff + 125 supportive). No changes to the faculty/staff housing or affordable and supportive housing component of Housing Project #2 would occur.
- **Alternative C. Reduced Vehicle Miles Traveled:** This alternative would incorporate additional project features to reduce vehicle miles traveled. Additional project features include incorporating more remote learning and working opportunities, increased transportation demand management (TDM) measures, reducing parking on campus by having no net parking spaces through buildout year 2036–37, and adding 500 beds for faculty and staff for a total of 12,231 beds for students, faculty, and staff. There are no changes proposed to Housing Projects #1 and #2 under Alternative C.
- **Alternative D: Additional Faculty and Staff Housing:** This alternative would add an additional 1,000 beds for faculty and staff housing in the Hill Campus East and the Clark Kerr Campus. The proposed LRDP buildout projections from the proposed project would remain the same. Therefore, this alternative would provide 1,549 net new faculty/staff beds and a total of 12,731 net new beds. There are no changes proposed to Housing Projects #1 and #2 under Alternative D.

Chapter 6, Alternatives to the Proposed Project, of this Draft EIR, includes a complete discussion of these alternatives. As discussed in Chapter 6 pursuant to CEQA Guidelines Section 15126.6, Alternative A would be the environmentally superior alternative. Since Alternative A is the No Project Alternative, the next environmentally superior alternative would be Alternative C.

2.4 ISSUES TO BE RESOLVED

CEQA Guidelines Section 15123(b)(3) requires that an EIR identify issues to be resolved, including the choice among alternatives and whether or how to mitigate significant impacts. With regard to the proposed project, the major issues to be resolved include decisions by the Regents, as lead agency, related to:

- Whether this EIR adequately describes the environmental impacts of the proposed project.
- Whether the benefits of the proposed project override environmental impacts, if any, that cannot be feasibly avoided or mitigated to a level of insignificance.
- Whether the identified continuing best practices and/or mitigation measures should be approved or modified.

- Whether there are other mitigation measures that should be applied to the proposed project besides those continuing best practices and/or mitigation measures identified in the EIR.
- Whether there are any alternatives to the proposed project that would substantially lessen any of the significant impacts of the proposed project and achieve most of the basic objectives.

2.5 AREAS OF CONTROVERSY

UC Berkeley issued a Notice of Preparation (NOP) on April 7, 2020. The CEQA-mandated scoping period for this EIR was between April 7, 2020, and May 15, 2020, during which interested agencies and the public could submit comments about the potential environmental impacts of the proposed project. During this time, UC Berkeley received 122 comment letters from a variety of State and local agencies, as well as organizations and members of the public. A copy of each letter is included in Appendix A, Notice of Preparation and Scoping Comments, of this Draft EIR.

The following is a discussion of issues that are likely to be of particular concern to agencies and interested members of the public during the environmental review process. Every concern applicable to the CEQA process is addressed in this Draft EIR, but this list is not necessarily exhaustive; rather, it attempts to capture concerns that are likely to generate the greatest interest based on the input received during the scoping process.

- **Air Quality and Greenhouse Gas (GHG) Emissions.** Pollution from construction activities and operation of future development and increased GHG emissions.
- **Population and Housing.** Impacts from students living off campus and the increased UC Berkeley population. Increasing the number of beds from what was initially shown in the NOP. Analysis of impacts related to enrollment increases in excess of projections contained in the current LRDP. Ba The balance between projected enrollment and staffing and housing.
- **Geology and Soils:** Impacts from seismic events.
- **Historic Resources.** Potential impacts from the loss of and impacts to historic buildings. The demolition of the UC Garage as part of Housing Project #1, and redevelopment of the People's Park site as part of Housing Project #2.
- **Hydrology.** Secondary impacts from the loss of pervious surfaces and stormwater runoff to Derby Creek.
- **Biological Resources.** Impacts to special-status species, nesting birds, loss of trees, and creek and riparian protection.
- **Transportation.** Pedestrian and bicycle safety, and impacts from motorized and nonmotorized vehicle interface. Effects of vehicle miles traveled.
- **Wildfire.** Increasing the risks of wildfire from the Hill Campus East. Impacts related to emergency evacuation from additional development.
- **Public Services.** Impacts to the City of Berkeley's police and fire protection services from additional growth.
- **Recreation.** Need for additional parks.

- **Utilities and Services Systems.** Impacts to existing utilities and the need for expanded water supply and wastewater treatment capacity.

All of the substantive environmental issues raised in the NOP comment letters and at the Scoping Meeting have been addressed or otherwise considered during preparation of this Draft EIR.

2.6 SUMMARY OF IMPACTS AND MITIGATION MEASURES

This section provides a summary of the environmental impacts associated with implementation of the proposed LRDP Update and construction and operation of the proposed Housing Projects #1 and #2. This section first illustrates the impacts at a glance for each project component and follows with a summary of the significant impacts and mitigation measures. The impacts at a glance are illustrated in Table 2-1, Impacts at a Glance, and Tables 2-2, 2-3, and 2-4 summarize the conclusions of the environmental analysis for the proposed LRDP Update, Housing Project #1, and Housing Project #2, respectively. Tables 2-2, Significant Impacts and Mitigation Measures for the Long Range Development Plan; 2-3, Significant Impacts and Mitigation Measures for Housing Project #1; and 2-4, Significant Impacts and Mitigation Measures for Housing Project #2, are organized to correspond with the environmental issues where significant impacts were determined and are arranged in four columns: 1) impact; 2) significance without mitigation; 3) mitigation measures; and 4) significance with mitigation. For a complete description of all potential impacts, including those environmental issues determined to have no impacts or where impacts were found to be less than significant without mitigation measures, please refer to the specific discussions in Chapters 5.1 through 5.18.

2.6.1 IMPACTS AT A GLANCE

This table provides a brief review of the impact conclusions identified from the environmental analysis in Chapters 5.1 through 5.18 of this Draft EIR.

2. EXECUTIVE SUMMARY

TABLE 2-1 IMPACTS AT A GLANCE

Environmental Impact/ Standard of Significance	LRDP Update	Housing Project #1	Housing Project #2
Aesthetics	AES-1	—	—
	AES-2	—	—
	AES-3	●	—
	AES-4	—	—
Air Quality	AIR-1	●●	○
	AIR-2	●●	○
	AIR-3	●●	○
	AIR-4	○	○
	AIR-5	○	○
Biological Resources	BIO-1	○	○
	BIO-2	○	—
	BIO-3	○	—
	BIO-4	●	●
	BIO-5	—	—
	BIO-6	○	○
Cultural Resources	CUL-1	●●	●●
	CUL-2	●	●
	CUL-3	○	○
	CUL-4	●●	●●
Energy	ENE-1	○	○
	ENE-2	—	—
	ENE-3	○	○
Geology and Soils	GEO-1	○	○
	GEO-2	○	○
	GEO-3	○	○
	GEO-4	○	○
	GEO-5	●	○
	GEO-6	○	○
Greenhouse Gas Emissions	GHG-1	○	○
	GHG-2	●	○
	GHG-3	○	○
Hazards and Hazardous Materials	HAZ-1	○	○
	HAZ-2	○	○
	HAZ-3	○	○
	HAZ-4	○	—
	HAZ-5	○	○
	HAZ-6	○	○
Hydrology and Water Quality	HYD-1	○	○
	HYD-2	○	○
	HYD-3	○	○
	HYD-4	○	—
	HYD-5	○	○
	HYD-6	○	○
Land Use and Planning	LUP-1	○	○
	LUP-2	○	○
	LUP-3	○	○

Key:

- = no impact
- = less than significant without mitigation
- = less than significant with mitigation
- = significant and unavoidable

TABLE 2-1 IMPACTS AT A GLANCE

Environmental Impact/ Standard of Significance		LRDP Update	Housing Project #1	Housing Project #2
Noise	NOI-1	●●	●●	●●
	NOI-2	●	●	●
	NOI-3	●●	●●	●●
Population and Housing	POP-1	●	○	○
	POP-2	●	○	○
	POP-3	○	○	○
Public Services	PS-1	○	○	○
	PS-2	○	○	○
	PS-3	○	○	○
	PS-4	○	○	○
	PS-5	●●	○	○
	PS-6	●●	○	○
	PS-7	○	○	○
	PS-8	○	○	○
Parks and Recreation	REC-1	○	○	○
	REC-2	○	○	○
	REC-3	○	○	○
	REC-4	○	○	○
Transportation	TRAN-1	●	○	○
	TRAN-2	○	○	○
	TRAN-3	●●	●●	●●
	TRAN-4	○	○	○
	TRAN-5	●●	●●	●●
Tribal Cultural Resources	TCR-1	●	●	●
	TCR-2	○	○	○
Utilities and Service Systems	UTIL-1	○	○	○
	UTIL-2	○	○	○
	UTIL-3	○	○	○
	UTIL-4	○	○	○
	UTIL-5	○	○	○
	UTIL-6	○	○	○
	UTIL-7	○	○	○
	UTIL-8	○	○	○
	UTIL-9	○	○	○
	UTIL-10	○	○	○
	UTIL-11	○	○	○
	UTIL-12	○	○	○
	UTIL-13	○	○	○
Wildfire	WF-1	○	○	○
	WF-2	●●	○	○
	WF-3	●●	○	○
	WF-4	●●	○	○
	WF-5	●●	○	○

Key:

- = no impact
- = less than significant without mitigation
- = less than significant with mitigation
- = significant and unavoidable

2.6.2 LONG RANGE DEVELOPMENT PLAN UPDATE SIGNIFICANT IMPACT SUMMARY

This table provides a brief review of the significant impact conclusions identified from the program-level environmental analysis for the proposed LRDP Update contained in Chapters 5.1 through 5.18 of this Draft EIR. As shown in Table 2-2, the LRDP Update would result in significant impacts related to air quality, cultural resources, greenhouse gas emissions, noise, and wildfire.

TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
AESTHETICS			
AES-3: The potential addition of a solar array in the Hill Campus East under the LRDP Update could potentially result in glare that may adversely affect views in the area.	S	AES-3: In the event that UC Berkeley installs a solar array in the Hill Campus East, or elsewhere in the LRDP Planning Area, prior to the installation of the photovoltaic panels the Campus Architect shall review the panel specifications and construction plans to ensure the panels are designed and installed to ensure the following: <ul style="list-style-type: none"> ▪ The angle at which panels are installed precludes, or minimizes to the maximum extent practicable, glare observed by viewers on the ground. ▪ The reflectivity of materials used shall not be greater than the reflectivity of standard materials used in residential and commercial developments. ▪ The project would not have potential significant glare or reflectivity impacts to viewers on the ground. 	LTS
AIR QUALITY			
AIR-1: Student population growth is greater than forecast in the current LRDP, potentially conflicting with the assumptions in the 2017 Clean Air Plan.	S	AIR-1: Implement Mitigation Measure POP-1.	SU
AIR-2.1: Construction activities associated with the proposed LRDP Update could generate fugitive dust and construction equipment exhaust that exceed the Bay Area Air Quality Management District average daily construction thresholds.	S	AIR-2.1: UC Berkeley shall use equipment that meets the United States Environmental Protection Agency Tier 4 emissions standards or higher for off-road diesel-powered construction equipment with more than 50 horsepower, unless it can be demonstrated to UC Berkeley that such equipment is not commercially available. For purposes of this mitigation measure, “commercially available” shall mean the availability of Tier 4 engines similar to the availability for other large-scale construction projects in the city occurring at the	SU

LTS = LESS THAN SIGNIFICANT; S = SIGNIFICANT; SU = SIGNIFICANT AND UNAVOIDABLE

TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>same time and taking into consideration factors such as (i) potential significant delays to critical-path timing of construction and (ii) geographic proximity to the project site of Tier 4 Final equipment. Where such equipment is not commercially available, as demonstrated by the construction contractor, Tier 3 equipment shall be used. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Tier 4 interim emissions standard for a similarly sized engine, as defined by the California Air Resources Board's regulations. The requirement to use Tier 4 interim equipment or higher for engines over 50 horsepower shall be identified in construction bids.</p> <ul style="list-style-type: none"> ▪ Prior to construction, the project engineer shall ensure that all demolition and grading plans clearly show the requirement for United States Environmental Protection Agency Tier 4 interim or higher emissions standards for construction equipment over 50 horsepower. ▪ During construction, the construction contractor shall maintain a list of all operating equipment in use on the construction site for verification by UC Berkeley. ▪ The construction equipment list shall state the makes, models, and numbers of construction equipment on-site. ▪ To the extent that equipment is available and cost-effective, contractors shall use electric, hybrid, or alternate-fueled off-road construction equipment. 	
AIR-2.2: Buildout of the proposed LRDP Update would result in a substantial increase in ROG emissions from use of consumer products and repainting building at UC Berkeley that would contribute to the ozone nonattainment designations of the San Francisco Bay Area Air Basin (project and cumulative).	S	AIR-2.2: To reduce Reactive Organic Gas emissions, for interior architectural coatings, UC Berkeley shall utilize certified (e.g., Greenguard or Green Seal) low-Volatile Organic Compound (VOC) paints or, when feasible, no-VOC paints (i.e., less than 5 grams per liter of VOC). UC Berkeley shall verify that the requirement to use low-VOC (and/or no-VOC) paints is identified in construction bids and on architectural plans.	SU
AIR-3: Construction activities associated with potential future development projects accommodated under the proposed LRDP	S	AIR-3: Construction of projects subject to CEQA on sites one acre or greater, within 1,000 feet of residential and other sensitive land use projects (e.g., hospitals, schools, nursing homes, day care centers), as	SU

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2. EXECUTIVE SUMMARY

TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
Update could expose nearby receptors to substantial concentrations of toxic air contaminants.		<p>measured from the property line of the project to the property line of the source/edge of the sensitive land use, utilize off-road equipment of 50 horsepower or more and, that occur for more than 12 months of active construction (i.e., exclusive of interior renovations), shall require preparation of a construction health risk assessment (HRA) prior to future discretionary project approval, as recommended in the current HRA Guidance Manual prepared by the California Office of Environmental Health Hazard Assessment (OEHHA). The construction HRA shall generally be prepared in accordance with policies and procedures of the OEHHA and the Bay Area Air Quality Management District. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the construction HRA shows that the incremental cancer risk exceeds 10 in a million (10E-06), PM_{2.5} concentrations exceed 0.3 µg/m³, or the appropriate noncancer hazard index exceeds 1.0, the construction HRA shall be required to identify all feasible measures capable of reducing potential cancer and noncancer risks to an acceptable level to the extent feasible (i.e., below 10 in a million or a hazard index of 1.0), including appropriate enforcement mechanisms.</p> <p>The construction health risk assessment shall be submitted to UC Berkeley's Office of Environment, Health & Safety for review and approval. Measures identified in the health risk assessment shall be included in grading plans prepared for the development projects. Compliance with these measures shall be verified during regular construction site inspections.</p>	
BIOLOGICAL RESOURCES			
BIO-4: New buildings and structures would create potential impacts associated with increased risk of bird collisions.	S	BIO-4: Structures and buildings that are new or are taller than existing structures and buildings shall be designed to minimize the potential risk of bird collisions. This should at a minimum include the following design considerations and management strategies: (1) avoid the use of highly reflective glass as an exterior treatment, which appears to reproduce natural habitat and can be attractive to some birds; (2) limit reflectivity and prevent exterior glass from attracting birds in	LTS

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		building plans by utilizing low-reflectivity glass and providing other non-attractive surface treatments; (3) use low-reflectivity glass or other bird safe glazing treatments for the majority of the building's glass surface, not just the lower levels; (4) for office and commercial buildings, interior light "pollution" should be reduced during evening hours through the use of a lighting control system programmed to shut off during non-work hours and between 10 p.m. and sunrise; (5) exterior lighting should be directed downward and screened to minimize illuminating the exterior of the building at night, except as needed for safety and security; (6) untreated glass skyways or walkways, freestanding glass walls, and transparent building corners should be avoided; (7) transparent glass should not be allowed at the rooflines of buildings, including in conjunction with green roofs; and (8) all roof mechanical equipment should preferably be covered by low-profile angled roofing or other treatments so that obstacles to bird flight are minimized. These strategies shall be incorporated at the direction of the Campus Architect during plan review, and the Campus Architect shall confirm the incorporation of these strategies into architectural plans prior to building construction.	
CULTURAL RESOURCES			
CUL-1.1: Future development under the proposed LRDP Update has the potential to permanently impact historic resources by demolishing or renovating historic buildings in a manner that is not in conformance with the Secretary of the Interior's Standards for Rehabilitation.	S	CUL-1.1a: If a project could cause a substantial adverse change in features that convey the significance of a historical resource that is designated or has been found eligible or potentially eligible for designation, or has not been evaluated but is more than 45 years of age, UC Berkeley shall engage the services of a professional meeting the Secretary of the Interior's Professional Qualification Standards in Architectural History to complete a historic resource assessment, overseen by the UC Berkeley Physical & Environmental Planning Office. The assessment shall provide background information on the history and development of the resource and, in particular, shall evaluate whether the resource appears to be eligible for National Register, California Register, or local landmark listing. The assessment shall also evaluate whether the proposed treatment of the historical resource is in conformance with the Secretary of the Interior's	SU

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2. EXECUTIVE SUMMARY

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Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>Standards for Rehabilitation (the Standards). If the proposed project is found to not be in conformance with the Standards, this assessment shall include recommendations for how to modify the project design so as to bring it into conformance. The Campus Architect shall verify compliance with this measure prior to the initiation of any site or building demolition or construction activities.</p> <p>CUL-1.1b: For projects that would cause a substantial adverse change in features that convey the significance of a historical resource that is designated or has been found eligible for designation, UC Berkeley shall have Historic American Building Survey Level II documentation completed for the historical resource and its setting. To ensure public access, UC Berkeley shall submit copies of the documentation to UC Berkeley's Bancroft Library and Environmental Design Archives, Berkeley Architectural Heritage Association, the Berkeley Historical Society, and the California Historical Resources Information System Northwest Information Center. This documentation shall include drawings, photographs, and a historical narrative:</p> <ul style="list-style-type: none"> ▪ Drawings: Existing historic drawings of the historical resource, if available, will be photographed with large-format negatives or photographically reproduced on Mylar. In the absence of existing drawings, full-measured drawings of the building's plan and exterior elevations shall be prepared prior to demolition. ▪ Photographs: Photo-documentation of the historical resource will be prepared to Historic American Building Survey standards for archival photography, prior to demolition. Historic American Building Survey standards require large-format black-and-white photography, with the original negatives having a minimum size of four inches by five inches. Digital photography, roll film, film packs, and electronic manipulation of images are not acceptable. All film prints, a minimum of four inches by five inches, must be hand-processed according to the manufacturer's specifications and printed on fiber-base, single-weight paper and dried to a full gloss finish. A minimum of 12 photographs shall be taken, detailing the site, building exterior, building interior, and character-defining 	

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Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>features. Photographs must be identified and labeled using Historic American Building Survey standards.</p> <ul style="list-style-type: none"> ▪ Historical Overview: A professional meeting the Secretary of the Interior's Professional Qualification Standards in Architectural History or History shall assemble historical background information relevant to the historical resource. <p>The Campus Architect shall verify compliance with this mitigation measure prior to the initiation of any site or building demolition or construction activities.</p> <p>CUL-1.1c: Based on Mitigation Measure CUL-1.1b, if any project could result in alteration of features of a historical resource that are character-defining or convey the significance of a resource, UC Berkeley shall give local historical societies or local architectural salvage companies the opportunity to salvage character-defining or significant features from the historical resource for public information or reuse in other locations. UC Berkeley shall contact local historical societies and architectural salvage companies and notify them of the available resources and make them available for removal. If, after 30 days, no organization is able and willing to salvage the significant materials, demolition can proceed. The Campus Architect shall verify compliance with this measure prior to the initiation of any demolition activities that could affect the resources.</p> <p>CUL-1.1d: For projects that would result in demolition of historic resources, prior to demolition the UC Berkeley Campus Architect shall determine which resources merit on-site interpretation, with consideration of available historic resource assessments and other relevant materials. For historic resources that will be demolished that the UC Berkeley Campus Architect has determined to be culturally significant, UC Berkeley shall incorporate an exhibit or display of the resource and a description of its historical significance into a publicly accessible portion of any subsequent development on the site. The display shall be developed with the assistance of the Campus</p>	

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2. EXECUTIVE SUMMARY

TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

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		Architect and one or more professionals experienced in creating such historical exhibits or displays.	
		CUL-1.1e: Implement Mitigation Measure NOI-2.	
CUL-2: The proposed project has the potential to disturb unknown archaeological resources that could exist beneath the depth of previous ground disturbances and result in a significant impact to an archaeological resource.	S	<p>CUL-2: For construction projects that include substantial ground-disturbing activities (including, but not limited to, soil removal, parcel grading, new utility trenching, and foundation-related excavation), UC Berkeley shall implement the following steps to ensure impacts to archaeological resources will be less than significant.</p> <ul style="list-style-type: none"> ▪ All Projects with Ground-Disturbing Activities. <ul style="list-style-type: none"> ▪ Prior to soil disturbance, UC Berkeley shall confirm that contractors have been notified of the procedures for the identification of federal- or State-eligible cultural resources, and that the construction crews are aware of the potential for previously undiscovered archaeological resources or tribal cultural resources on site, of the laws protecting these resources and associated penalties, and of the procedures to follow should they discover cultural resources during project-related work. ▪ If a resource is discovered during construction (whether or not an archaeologist is present), the following measures shall be implemented: <ul style="list-style-type: none"> ▪ All soil disturbing work within 35 feet of the find shall cease. ▪ UC Berkeley shall contact a qualified archaeologist to provide and implement a plan for survey, subsurface investigation as needed to define the deposit, and assessment of the remainder of the site within the project area to determine whether the resource is significant and would be affected by the project. ▪ Any previously undiscovered resources found during construction activities shall be recorded on appropriate California Department of Parks and Recreation forms and evaluated for significance in terms of the California Environmental Quality Act (CEQA) criteria by a qualified archaeologist. 	LTS

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		<ul style="list-style-type: none"> ▪ If the resource is a tribal cultural resource, the consulting archaeologist shall consult with the appropriate tribe to evaluate the significance of the resource and to recommend appropriate and feasible avoidance, testing, preservation or mitigation measures, in light of factors such as the significance of the find, proposed project design, costs, and other considerations. ▪ If avoidance is infeasible, other appropriate measures (e.g., data recovery) may be implemented. ▪ If the resource is a non-tribal resource determined significant under CEQA, the qualified archaeologist shall prepare and implement a research design and archaeological data recovery plan that will capture those categories of data for which the site is significant. ▪ The archaeologist shall also perform appropriate technical analyses; prepare a comprehensive report complete with methods, results, and recommendations; and provide for the permanent curation of the recovered resources if appropriate. ▪ The report shall be submitted to the relevant city (if it falls under Berkeley or Oakland boundaries), California Historic Resources Information System Northwest Information Center, and the State Historic Preservation Office, if required. ▪ Areas with High Archaeological Sensitivity. In addition to the requirements above for all construction projects with ground-disturbing activities, for project in areas with moderately high to extreme archaeological sensitivity (as shown on the confidential Figure 11, Prehistoric Cultural Sensitivity Overlay Analysis Results, prepared for the 2021 LRDP Update EIR) ground disturbance activities shall be monitored. Monitoring shall occur for soil removal, parcel grading, new utility trenching, and foundation-related excavation in those areas that extend into previously undisturbed soils. Archaeological monitoring must be undertaken by a qualified archaeologist or the appropriate tribe, if the resources are tribal, who is familiar with a wide range of prehistoric 	

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2. EXECUTIVE SUMMARY

TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>archaeological or tribal remains: artifact identification, human and faunal bone, soil descriptions, and interpretation. Based on project-specific daily construction schedules, field conditions, and archaeological observations, full-time monitoring may not be warranted following initial observations.</p> <ul style="list-style-type: none"> ▪ Sites with Known Archaeological Resources. In the event the disturbance of a site with known archaeological or tribal cultural resources cannot be avoided, in addition to the requirements above for all construction projects with ground-disturbing activities, for project sites with known on-site archaeological or tribal cultural resources, the following additional actions shall be implemented prior to ground disturbance: <ul style="list-style-type: none"> ▪ UC Berkeley will retain a qualified archaeologist to conduct a subsurface investigation of the project site, and to ascertain the extent of the deposit of any buried archaeological materials relative to the project's area of potential effects. The archaeologist shall prepare a site record and file it with the California Historical Resource Information System. ▪ If the resource extends into the project's area of potential effects, the resource shall be evaluated by a qualified archaeologist. UC Berkeley shall consider this evaluation in determining whether the resource qualifies as a historical resource or a unique archaeological resource under the criteria of California Environmental Quality Act (CEQA) Guidelines Section 15064.5. ▪ If the resource does not qualify, no further mitigation is required unless there is a discovery of additional resources during construction (as required above for all construction projects with ground-disturbing activities). ▪ If a resource is determined to qualify as an historical resource or a unique archaeological resource in accordance with CEQA, UC Berkeley shall consult with a qualified archaeologist to mitigate the effect through data recovery if appropriate to the resource or, if data recovery is infeasible, to consider means of avoiding or reducing ground disturbance within the 	

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Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		site boundaries, including where and if feasible, minor modifications of building footprint, landscape modification, the placement of protective fill, the establishment of a preservation easement, or other means that would permit avoidance or substantial preservation in place of the resource. A written report of the results of investigations shall be prepared by a qualified archaeologist and filed with the University Archives/ Bancroft Library and the California Historic Resources Information System Northwest Information Center.	
CUL-4: The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in significant cumulative impacts with respect to cultural resources.	S	CUL-4: Implement Mitigation Measures CUL-1.1a through CUL-1.1e; CUL-1.2a and CUL-1b; CUL-1.3a and CUL-1.3b; CUL-1.4; CUL-1.5; and CUL-2.	SU
ENERGY			
<i>No significant impacts</i>			
GEOLOGY AND SOILS			
GEO-5: Construction of new development or redevelopment within highly sensitive geologic formations would have the potential to adversely affect unique paleontological resources.	S	GEO-5: For ground-disturbing activities within highly sensitive geologic formations (i.e., Franciscan Assemblage, Great Valley Sequence, Orinda Formation, Claremont Chert, unnamed mudstone, or older alluvium, as shown on Figure 5.6-1, Geologic Map, of the 2021 LRDP Update EIR), if pre-construction testing does not take place, ground-disturbing activities shall implement the following measures. "Ground-disturbing activities" shall include soil removal, parcel grading, utility trenching, and foundation-related excavation in those areas that extend into previously undisturbed soils. <ul style="list-style-type: none"> UC Berkeley shall provide a paleontological resources awareness training program to all construction personnel active on the project site during earth moving activities. The first training will be provided prior to the initiation of ground disturbing activities by a qualified paleontologist. The program will include relevant information regarding fossils and fossil-bearing formations that may be encountered. The training will also describe appropriate 	LTS

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2. EXECUTIVE SUMMARY

TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

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		<p>avoidance and minimization measures for resources that have the potential to be located on the project site.</p> <ul style="list-style-type: none"> ▪ If any paleontological resources are encountered during ground-disturbing activities, the contractor shall ensure that activities in the immediate area of the find are halted and that UC Berkeley is informed. UC Berkeley shall retain a qualified paleontologist to evaluate the discovery and recommend appropriate treatment options pursuant to guidelines developed by the Society of Vertebrate Paleontology, including development and implementation of a paleontological resource impact mitigation program by a qualified paleontologist for treatment of the particular resource, if applicable. These measures may include, but not be limited to the following: <ul style="list-style-type: none"> ▪ salvage of unearthed fossil remains and/or traces (e.g., tracks, trails, burrows); ▪ screen washing to recover small specimens; ▪ preparation of salvaged fossils to a point of being ready for curation (e.g., removal of enclosing matrix, stabilization and repair of specimens, and construction of reinforced support cradles); and ▪ identification, cataloging, curation, and provision for repository storage of prepared fossil specimens. 	
GREENHOUSE GAS EMISSIONS			
GHG-2: GHG emissions resulting from the proposed LRDP Update could exceed the UCOP and UC Berkeley carbon neutrality goals derived from the State's long-term climate change goals under EO B-55-18.	S	GHG-2: UC Berkeley shall make the following separate, though overlapping, greenhouse gas (GHG) emission reduction commitments (1) By 2036, UC Berkeley shall offset 67 percent of GHG emissions; and (2) By 2045 and thereafter, UC Berkeley shall achieve carbon neutrality (100 percent offset). Years 2036 and 2045 reduction targets are required to be achieved based on actual emission calculations completed in the future, as discussed below under "Measure Monitoring and Reporting," and may therefore change over time.	LTS

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		<p><i>UC Sustainable Practices Policy.</i> UC Berkeley will purchase voluntary carbon credits as the final action to reach the GHG emission reduction targets outlined in the UC Sustainable Practices Policy. As part of the University Carbon Neutrality Initiative, internal guidelines have been developed to ensure that any use of credits for this purpose will result in additional, verified GHG emissions reductions from actions that align as much as possible with UC Berkeley's research, teaching, and public service mission.</p> <p><i>Emissions Reduction Options.</i> UC Berkeley shall do one or more of the following options to reduce GHG emissions generated by the proposed LRDP Update to achieve the measure performance standards.</p> <ol style="list-style-type: none"> Option 1: On-site GHG Reduction Actions. Implement on-site GHG reduction actions at UC Berkeley specified in the UC Sustainable Practices Policy and UC Berkeley sustainability plans, standards and policies. Option 2: Voluntary and UC Developed Carbon Offsets. In addition to compliance offsets required by cap and trade, UC Berkeley may purchase GHG carbon offsets from a voluntary GHG carbon offset provider with an established protocol that requires projects generating GHG carbon offsets to demonstrate that the reduction of GHG emissions are real, permanent, quantifiable, verifiable, enforceable, and additional (per the definition in California Health and Safety Code Sections 38562(d)(1) and (2)). UC Berkeley may purchase GHG carbon offsets from UC developed voluntary carbon offset projects that are real, permanent, quantifiable, peer verifiable, enforceable, and additional. Definitions for these terms follow. <ol style="list-style-type: none"> Real: Estimated GHG reductions should not be an artifact of incomplete or inaccurate emissions accounting. Methods for quantifying emission reductions should be conservative to avoid overstating a project's effects. The effects of a project on GHG 	

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2. EXECUTIVE SUMMARY

TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

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		<p>emissions must be comprehensively accounted for, including unintended effects (often referred to as “leakage”).⁵</p> <p>b. Additional: GHG reductions must be additional to any that would have occurred in the absence of the Climate Action Reserve, or of a market for GHG reductions generally. “Business as usual” reductions (i.e., those that would occur in the absence of a GHG reduction market) should not be eligible for registration.</p> <p>c. Permanent: To function as offsets to GHG emissions, GHG reductions must effectively be “permanent.” This means, in general, that any net reversal in GHG reductions used to offset emissions must be fully accounted for and compensated through the achievement of additional reductions.</p> <p>d. Quantifiable: The ability to accurately measure and calculate GHG reductions or GHG removal enhancements relative to a project baseline in a reliable and replicable manner for all GHG emission sources, GHG sinks, or GHG reservoirs included within the offset project boundary, while accounting for uncertainty and activity-shifting leakage and market-shifting leakage.</p> <p>e. Verified: GHG reductions must result from activities that have been verified. Verification requires third-party (or peer review if UC-developed voluntary carbon offset projects) of monitoring data for a project to ensure the data are complete and accurate.</p> <p>f. Enforceable: The emission reductions from offset must be backed by a legal instrument or contract that defines exclusive ownership and can be enforced within the legal system in the country in which the offset project occurs or through other compulsory means. Please note that for this mitigation measure, only credits originating within the United States are allowed.</p>	

⁵ To ensure that GHG reductions are real, CARB requires the reduction be a direct reduction within a confined project boundary.

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		<i>Mitigation Reporting.</i> As a CARB-covered entity, UC Berkeley will ensure emissions generated by the cogeneration plant and other stationary sources comply with CARB's Cap and Trade Program. Likewise, UC Berkeley will implement the UC Sustainable Practices Policy to meet the requirement of carbon neutrality for Scope 1 and 2 emissions by 2025 and carbon neutrality for Scope 3 emissions by 2045, as described above. These commitments will be incorporated into UC Berkeley's annual GHG inventory, which is used to track GHG emissions and sources on the UC Berkeley campus. GHG reductions achieved by the on-site and off-site actions will be incorporated into the annual GHG inventory and annual reporting practices established by the UC Sustainable Practices Policy. As part of this reporting, the estimated annual emissions shall then be compared to the measure performance standards (i.e., 67 percent reduction by 2036 and 100 percent by 2045) to determine the level of additional GHG reductions (if any) that may be required.	
HAZARDS AND HAZARDOUS MATERIALS			
<i>No significant impacts</i>			
HYDROLOGY AND WATER QUALITY			
<i>No significant impacts</i>			
LAND USE AND PLANNING			
<i>No significant impacts</i>			
NOISE			
NOI-1: Noise from construction equipment could expose sensitive receptors to noise that exceeds the thresholds of significance.	S	NOI-1: For construction projects that last longer than 30 days, and where construction noise could exceed the applicable noise thresholds of significance (see City of Berkeley Municipal Code Section 13.40.070, Prohibited Acts, and City of Oakland Municipal Code Section 17.120.050(A), Noise (Residential Zone Noise Level Standards)) for maximum construction noise levels (dBA L _{max}), or that involve impulse equipment such as jackhammers, hoe rams, and pile driving, temporary noise barriers at least 12 feet high will be erected,	SU

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		as necessary and feasible, to reduce construction noise levels. Temporary noise barriers will be constructed with solid material with a density of at least 1.5 pounds per square foot with no gaps from the ground to the top of the temporary noise barrier and may be lined on the construction side with an acoustical blanket, curtain, or equivalent absorptive material. UC Berkeley shall verify compliance with this measure prior to issuance of demolition, grading, and/or building permits.	
NOI-2: Construction could result in excessive groundborne vibration to nearby sensitive receptors.	S	<p>NOI-2: If any vibration causing construction activities/equipment are anticipated to be used for future development projects, UC Berkeley shall implement the following steps to ensure impacts from vibration causing construction activities/equipment will be less than significant.</p> <ul style="list-style-type: none"> ▪ Step 1 (Activity/Equipment Screening Distances): UC Berkeley shall use the construction vibration screening standards shown below based on Federal Transit Administration criteria to determine if the construction activity/equipment is within the vibration screening distances that could cause building damage/human annoyance or sensitive equipment disturbance. If the construction activity/equipment is within the screening distance, then Step 2 (Alternative Methods/Equipment) shall be implemented. 	LTS

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Screening Distances to PPV in/sec Threshold: Building Damage				
Activity/Equipment	Reference Vibration Levels (in/sec PPV) at 25 feet	Screening Level Distance in feet for 0.20 in/sec PPV ^a	Screening Level Distance in feet for 0.12 in/sec PPV ^b	
Pile Driving	1.518	97	136	
Caisson Drilling	0.089	15	21	
Vibratory Roller	0.21	26	37	
Large Bulldozer	0.089	15	21	
Screening Distance to VdB Threshold: Human Annoyance and Sensitive Equipment Disturbance				
Activity/Equipment	Reference Vibration Levels (VdB) at 25 feet	Screening Level Distance in feet for 72 VdB ^c	Screening Level Distance in feet for 65 VdB ^d	
Pile Driving	112	520	890	
Caisson Drilling	87	80	140	
Vibratory Roller	94	140	240	
Large Bulldozer	87	80	140	

Notes: Peak Particle Velocity inches per second (PPV in/sec); Vibration Decibel (VdB).
a. FTA Building Category III, Non-engineered timber and masonry buildings (residential).
b. FTA Building Category IV, Buildings extremely susceptible to vibration damage (historic).
c. FTA Land Use Category 2, Residences and buildings where people normally sleep.
d. FTA Land Use Category 1, Buildings where vibration would interfere with interior operations.
Source: Federal Transit Administration, 2018, Transit Noise and Vibration Impact Assessment.

- **Step 2 (Alternative Methods/Equipment):** When the anticipated vibration-causing construction activity/equipment is within the screening standards in Step 1 (Activity/Equipment Screening Distances), UC Berkeley shall consider whether alternative methods/equipment are available and shall verify that the alternative method/equipment is shown on the construction plans prior to the beginning of construction. Alternative methods/equipment may include, but are not limited to:
 - For pile driving, the use of caisson drilling (drill piles) vibratory pile drivers, oscillating or rotating pile installation methods, and jetting or partial jetting of piles into place using a water injection at the tip of the pile shall be used, where feasible.
 - For paving, use of a static roller in lieu of a vibratory roller shall be implemented.
 - For grading and earthwork activities, off-road equipment that shall be limited to 100 horsepower or less.

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Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>Where alternative methods/equipment to vibration causing activities/equipment are not feasible, then Step 3 (Construction Vibration Monitoring Program) shall be implemented.</p> <ul style="list-style-type: none"> ▪ Step 3 (Construction Vibration Monitoring Program): Prior to any project-related excavation, demolition or construction activity for projects within the screening distances listed in Step 1 (Activity/Equipment Screening Distances) and where alternative methods/equipment to vibration causing activities/equipment are not feasible pursuant to Step 2 (Alternative Methods/Equipment), UC Berkeley shall prepare a construction vibration monitoring program. The program shall be prepared and implemented by a qualified acoustical consultant or structural engineer. Where the vibration sensitive receptors are historic resources, the program shall be prepared and implemented by a structural engineer with a minimum of five years of experience in the rehabilitation and restoration of historic buildings and a historic preservation architect meeting the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, Professional Qualifications Standards. The program shall include the following: <ul style="list-style-type: none"> ▪ Prepare an existing conditions study to establish the baseline condition of the vibration sensitive resources in the form of written descriptions with a photo survey, elevation survey, and crack-monitoring survey for the vibration-sensitive building or structure. The photo survey shall include internal and external crack monitoring in the structure, settlement, and distress, and document the condition of the foundation, walls and other structural elements in the interior and exterior of the building or structure. Surveys will be performed prior to, in regular intervals during, and after completion of all vibration-generating activity. Where receptors are historic resources, the study shall describe the physical characteristics of the resources that convey their historic significance. 	

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TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<ul style="list-style-type: none"> ▪ Determine the number, type, and location of vibration sensors and establish a vibration velocity limit (as determined based on a detailed review of the proposed building), method (including locations and instrumentation) for monitoring vibrations during construction, and method for alerting responsible persons who have the authority to halt construction should limits be exceeded or damaged observed. ▪ Perform monitoring surveys prior to, in regular intervals during, and after completion of all vibration-generating activity and report any changes to existing conditions, including, but not limited to, expansion of existing cracks, new spalls, other exterior deterioration, or any problems with character-defining features of a historic resource are discovered. UC Berkeley shall establish the frequency of monitoring and reporting, based upon the recommendations of the qualified acoustical consultant or structural engineer or if there are historic buildings, the historic architect and structural engineer. Monitoring reports shall be submitted to UC Berkeley's designated representative responsible for construction activities. ▪ Develop a vibration monitoring and construction contingency plan, which shall identify where monitoring would be conducted, establish a vibration monitoring schedule, define structure-specific vibration limits, and require photo, elevation, and crack surveys to document conditions before and after demolition and construction activities. Construction contingencies would be identified for when vibration levels approach the limits. If vibration levels approach limits, suspend construction and implement contingencies to either lower vibration levels or secure the affected structure. ▪ Report substantial adverse impacts to vibration sensitive buildings including historic resources related to construction activities that are found during construction to UC Berkeley's designated representative responsible for construction activities. UC Berkeley's designated representative shall adhere to the 	

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2. EXECUTIVE SUMMARY

TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>monitoring team's recommendations for corrective measures, including halting construction or using different methods, in situations where demolition, excavation/construction activities would imminently endanger historic resources. UC Berkeley's designated representative would respond to any claims of damage by inspecting the affected property promptly, but in no case more than five working days after the claim was filed and received by UC Berkeley's designated representative. Any new cracks or other damage to any of the identified properties will be compared to pre-construction conditions and a determination made as to whether the proposed project could have caused such damage. In the event that the project is demonstrated to have caused any damage, such damage would be repaired to the pre-existing condition. Site visit reports and documents associated with claims processing would be provided to the relevant government body with jurisdiction over the neighboring historic resource, as necessary.</p> <ul style="list-style-type: none"> ▪ Conduct a post-survey on the structure where either monitoring has indicated high levels or complaints of damage and make appropriate repairs where damage has occurred as a result of construction activities. ▪ Prepare a construction vibration monitoring report that summarizes the results of all vibration monitoring and submit the report after the completion of each phase identified in the project construction schedule. The vibration monitoring report shall include a description of measurement methods, equipment used, calibration certificates, and graphics as required to clearly identify vibration-monitoring locations. An explanation of all events that exceeded vibration limits shall be included together with proper documentation supporting any such claims. The construction vibration monitoring report shall be submitted to UC Berkeley with two weeks upon completion of each phase identified in the project construction schedule. 	

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TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<ul style="list-style-type: none"> Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person shall be clearly posted in one or more locations at the construction site. 	
NOI-3: The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to construction noise.	S	NOI-3: Implement Mitigation Measure NOI-1.	SU
POPULATION AND HOUSING			
POP-1: As a result of both direct population growth (from the construction of new UC Berkeley housing) and indirect population growth (from students and faculty/staff seeking non-UC Berkeley housing in Berkeley), the LRDP Update would accommodate a level of population growth that would exceed the current ABAG Projections for Berkeley.	S	POP-1: UC Berkeley shall, on an annual basis, provide a summary of LRDP enrollment and housing production data, including its LRDP enrollment projections and housing production projections, to the City of Berkeley and the Association of Bay Area Governments, for the purpose of ensuring that local and regional planning projections account for UC Berkeley-related population changes. UC Berkeley's Office of Physical & Environmental Planning shall verify compliance with this measure.	LTS
POP-2: Future development projects could result in the displacement of existing residents.	S	POP-2: Prior to issuance of any permits for construction of projects that have the potential to displace existing residents or businesses, UC Berkeley shall comply with the UC Relocation Assistance Act Policy for Real Estate Acquisitions and Leases. UC Berkeley's Real Estate Office shall verify compliance with this measure.	LTS
PUBLIC SERVICES			
PS-5: Student population growth contributed to Berkeley Unified School District from construction of housing under the LRDP Update that could support families has the potential to result in the need for new or modified school facilities, the construction of which could result in environmental impacts.	S	PS-5: UC Berkeley will, on an annual basis, provide housing production projections to the Berkeley Unified School District (BUSD) for the purpose of ensuring that BUSD enrollment projections account for UC Berkeley-related population changes, when UC Berkeley anticipates increasing its housing stock that would serve families which could potentially attend the BUSD. UC Berkeley's Office of Physical & Environmental Planning shall verify compliance with this measure.	SU
PS-6: Student population growth contributed to Berkeley Unified School District from construction of housing under the LRDP Update, in combination with past, present, and reasonably foreseeable projects, has the potential to result in the need for	S	PS-6: Implement Mitigation Measure PS-5.	SU

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2. EXECUTIVE SUMMARY

TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
new or modified school facilities, the construction of which could result in environmental impacts.			
PARKS AND RECREATION			
<i>No significant impacts</i>			
TRANSPORTATION			
TRAN-1: Implementation of the proposed project would not be consistent with the UC Sustainable Practices Policy and the UC Berkeley Sustainability Plan.	S	<p>TRAN-1: UC Berkeley shall continue to survey the transportation practices of both students and employees at least once every 3 years and use the survey results to adjust the travel demand management programs, parking pricing, education and outreach, support for telecommuting, and other measures to achieve the vehicle mode share goals in the UC Sustainable Practices Policy and the UC Berkeley Sustainability Plan. To meet these goals as of 2020, UC Berkeley's single-occupant vehicle (SOV) targets are:</p> <ul style="list-style-type: none"> 2025: Employees SOV rate of 36 percent, Student SOV rate of 5 percent 2050: Employee SOV rate of 36 percent, Employee and Student SOV rate of 13 percent <p>UC Berkeley's Office of Physical & Environmental Planning shall verify compliance with this measure and may update these targets over time to ensure ongoing compliance with the UC Sustainable Practices Policy and the UC Berkeley Sustainability Plan.</p>	LTS
TRAN-3: New buildings and structures that are 100 feet or more in height, based on final exterior design, could create wind hazards at the pedestrian (ground) level.	S	<p>TRAN-3: Prior to final exterior design approval of new buildings or structures that are 100 feet or more in height, the building or structure shall be analyzed for potential wind hazards at the pedestrian level in the public right-of-way around the project site. The wind hazards analysis shall be conducted by a qualified wind engineer using the final exterior plans. The analysis shall apply the industry-acceptable Lawson Criteria for pedestrian-level wind distress (safety) to identify locations where wind speeds may be hazardous to pedestrians in the public right-of-way around the project site. Where wind hazards are identified based on the final building or structure exterior designs, UC Berkeley, in consultation with the qualified wind</p>	SU

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TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		engineer, shall identify feasible building or structure design refinements to reduce the hazardous wind effects to an acceptable level as determined by the qualified wind engineer using the Lawson Criteria. Feasible industry-standard wind reduction design refinements may include, but are not limited to, adjusted building setbacks, upper-floor building stepbacks, terraces, rounded or redesigned building corners, screens, canopies, or landscaping. Following the identification of feasible design refinements by UC Berkeley in consultation with the qualified wind engineer, the qualified wind engineer shall provide evidence of acceptable (i.e., nonhazardous) wind effects with the incorporation of the feasible building or structure exterior design refinements. The results of the wind analysis and the feasible and effective design refinements to reduce wind hazards shall be submitted to the UC Berkeley project manager for review prior to final design approval.	
TRAN-5: The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to wind hazards at the pedestrian (ground) level.	S	TRAN-5: Implement Mitigation Measure TRAN-3.	SU
TRIBAL CULTURAL RESOURCES			
TCR-1: Ground-disturbing activities could encounter and cause a substantial adverse change to tribal cultural resources.	S	TCR-1: Implement Mitigation Measure CUL-2.	LTS
UTILITIES AND SERVICE SYSTEMS			
<i>No significant impacts</i>			
WILDFIRE			
WF-2: Development under the proposed LRDP Update could include an increase in academic life space, utility infrastructure upgrades, and energy resilience projects within the Hill Campus East, which is in a Very High FHSZ and has steep terrain and heavy vegetation. Development within this area could exacerbate wildfire risks.	S	WF-2a: Project sponsors for new UC Berkeley development within a Very High Fire Hazard Severity Zone shall prepare and implement a Wildfire Management Plan to prevent wildfires from construction and operation of new development. A Wildfire Management Plan shall include, but not be limited to, the following: <ul style="list-style-type: none"> ▪ The objectives of the plan. ▪ Responsibilities of persons responsible for executing the plan. 	SU

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2. EXECUTIVE SUMMARY

TABLE 2-2 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR THE LONG RANGE DEVELOPMENT PLAN

Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<ul style="list-style-type: none"> Location of applicable infrastructure covered under the plan. Plans for vegetation management, and incorporation of vegetation management strategies from the UC Berkeley's Wildland Vegetative Fuel Management Plan. Plans for emergency access and evacuation that ensure adequate access to and throughout the site for emergency responders, and adequate egress from the site for evacuation events. A list that identifies, describes, and prioritizes all wildfire risks associated with the infrastructure. Plans for post-fire hazard mitigation, including for protection of areas downslope from debris slides. Plans for regular inspections of electrical infrastructure. <p>The Wildfire Management Plan shall be submitted to the UC Berkeley project manager and the Campus Fire Marshal for review and approval prior to initiation of construction activities.</p> <p>WF-2b: Vegetation and wildland management activities shall comply with Public Resources Code Section 4442, which requires that engines that use hydrocarbon fuels be equipped with a spark arrester, and that these engines be maintained in effective working order to help prevent fire. These activities shall also comply with the Environmental Protection Measures in the UC Berkeley Wildland Vegetative Fuel Management Plan. UC Berkeley's Office of Physical & Environmental Planning shall verify compliance with this measure for ongoing UC Berkeley vegetation management activities and for future development projects.</p>	
WF-3: The proposed LRDP Update could involve the installation or maintenance of infrastructure such as roads, fuel breaks, emergency water sources, power lines, or other utilities associated with potential development within the Very High FHSZ, including with the potential addition of a solar array installation in the Hill Campus East. Construction and operation of these	S	WF-3: Electrical lines associated with future electrical infrastructure shall be undergrounded, where feasible. UC Berkeley shall verify compliance with this measure as part of plan review prior to construction.	SU

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Environmental Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
improvements could exacerbate fire risk through construction and maintenance activities and/or through the introduction of additional electrical infrastructure.			
WF-4: The proposed LRDP Update could involve development within the Hill Campus East, which is in a Very High FHSZ, contains steep terrain, and is largely undeveloped, and which abuts existing residential areas. Therefore, potential development could expose people or structures to downslope landslides as a result of postfire slope instability.	S	WF-4: Implement Mitigation Measure WF-2a.	SU
WF-5: Potential development under the proposed LRDP Update could, in combination with other surrounding and future projects in the SRA or Very High FHSZ, result in cumulative impacts associated with the exposure of project occupants to pollutant concentrations from a wildfire or uncontrolled spread of a wildfire due to slope, prevailing winds, or other factors; the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or exposure of people or structures to significant risks including downslope landslides as a result of postfire slope instability.	S	WF-5: Implement Mitigation Measures WF-2a, WF-2b, WF-3, and WF-4. No additional feasible mitigation measures are available to reduce this cumulative impact to a less-than-significant level.	SU

2.6.3 HOUSING PROJECT #1 SIGNIFICANT IMPACT SUMMARY

This table provides a brief review of the significant impact conclusions identified from the project-level environmental analysis for the proposed Housing Project #1 contained in Chapters 5.1 through 5.18 of this Draft EIR. As shown in Table 2-3, the LRDP Update would result in significant impacts related to cultural resources and noise.

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2. EXECUTIVE SUMMARY

TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
AESTHETICS			
<i>No significant impacts</i>			
AIR QUALITY			
<i>No significant impacts</i>			
BIOLOGICAL RESOURCES			
BIO-4: New buildings and structures would create potential impacts associated with increased risk of bird collisions.	S	BIO-4: Structures and buildings that are new or are taller than existing structures and buildings shall be designed to minimize the potential risk of bird collisions. This should at a minimum include the following design considerations and management strategies: (1) avoid the use of highly reflective glass as an exterior treatment, which appears to reproduce natural habitat and can be attractive to some birds; (2) limit reflectivity and prevent exterior glass from attracting birds in building plans by utilizing low-reflectivity glass and providing other non-attractive surface treatments; (3) use low-reflectivity glass or other bird safe glazing treatments for the majority of the building's glass surface, not just the lower levels; (4) for office and commercial buildings, interior light "pollution" should be reduced during evening hours through the use of a lighting control system programmed to shut off during non-work hours and between 10 p.m. and sunrise; (5) exterior lighting should be directed downward and screened to minimize illuminating the exterior of the building at night, except as needed for safety and security; (6) untreated glass skyways or walkways, freestanding glass walls, and transparent building corners should be avoided; (7) transparent glass should not be allowed at the rooflines of buildings, including in conjunction with green roofs; and (8) all roof mechanical equipment should preferably be covered by low-profile angled roofing or other treatments so that obstacles to bird flight are minimized. These strategies shall be incorporated at the direction of the Campus Architect during plan review, and the Campus Architect shall confirm the incorporation of these strategies into architectural plans prior to building construction.	LTS

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TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

CULTURAL RESOURCES			
CUL-1.2: Housing Project #1 would demolish the University Garage (1952 Oxford Street), a designated City of Berkeley Historical Landmark and eligible for listing in the California Register, which would result in a substantial adverse change to a historic resource.	S	CUL-1.2a: Implement Mitigation Measure CUL-1.1b. CUL-1.2b: Implement Mitigation Measure CUL-1.1d.	SU
CUL-2: The proposed project has the potential to disturb unknown archaeological resources that could exist beneath the depth of previous ground disturbances and result in a significant impact to an archaeological resource.	S	<p>CUL-2: For construction projects that include substantial ground-disturbing activities (including, but not limited to, soil removal, parcel grading, new utility trenching, and foundation-related excavation), UC Berkeley shall implement the following steps to ensure impacts to archaeological resources will be less than significant.</p> <ul style="list-style-type: none"> ▪ All Projects with Ground-Disturbing Activities. <ul style="list-style-type: none"> ▪ Prior to soil disturbance, UC Berkeley shall confirm that contractors have been notified of the procedures for the identification of federal- or State-eligible cultural resources, and that the construction crews are aware of the potential for previously undiscovered archaeological resources or tribal cultural resources on site, of the laws protecting these resources and associated penalties, and of the procedures to follow should they discover cultural resources during project-related work. ▪ If a resource is discovered during construction (whether or not an archaeologist is present), the following measures shall be implemented: <ul style="list-style-type: none"> ▪ All soil disturbing work within 35 feet of the find shall cease. ▪ UC Berkeley shall contact a qualified archaeologist to provide and implement a plan for survey, subsurface investigation as needed to define the deposit, and assessment of the remainder of the site within the project area to determine whether the resource is significant and would be affected by the project. ▪ Any previously undiscovered resources found during construction activities shall be recorded on appropriate California Department of Parks and Recreation forms and evaluated for significance in terms of the California Environmental Quality Act (CEQA) criteria by a qualified archaeologist. 	LTS

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TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

- If the resource is a tribal cultural resource, the consulting archaeologist shall consult with the appropriate tribe to evaluate the significance of the resource and to recommend appropriate and feasible avoidance, testing, preservation or mitigation measures, in light of factors such as the significance of the find, proposed project design, costs, and other considerations.
 - If avoidance is infeasible, other appropriate measures (e.g., data recovery) may be implemented.
 - If the resource is a non-tribal resource determined significant under CEQA, the qualified archaeologist shall prepare and implement a research design and archaeological data recovery plan that will capture those categories of data for which the site is significant.
 - The archaeologist shall also perform appropriate technical analyses; prepare a comprehensive report complete with methods, results, and recommendations; and provide for the permanent curation of the recovered resources if appropriate.
 - The report shall be submitted to the relevant city (if it falls under Berkeley or Oakland boundaries), California Historic Resources Information System Northwest Information Center, and the State Historic Preservation Office, if required.
 - **Areas with High Archaeological Sensitivity.** In addition to the requirements above for all construction projects with ground-disturbing activities, for project in areas with moderately high to extreme archaeological sensitivity (as shown on the confidential Figure 11, Prehistoric Cultural Sensitivity Overlay Analysis Results, prepared for the 2021 LRDP Update EIR) ground disturbance activities shall be monitored. Monitoring shall occur for soil removal, parcel grading, new utility trenching, and foundation-related excavation in those areas that extend into previously undisturbed soils. Archaeological monitoring must be undertaken by a qualified archaeologist or the appropriate tribe, if the resources are tribal, who is familiar with a wide range of prehistoric archaeological or tribal remains: artifact identification, human and faunal bone, soil descriptions, and interpretation. Based on project-specific daily construction schedules, field conditions, and archaeological
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TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

	<p>observations, full-time monitoring may not be warranted following initial observations.</p> <ul style="list-style-type: none"> ▪ Sites with Known Archaeological Resources. In the event the disturbance of a site with known archaeological or tribal cultural resources cannot be avoided, in addition to the requirements above for all construction projects with ground-disturbing activities, for project sites with known on-site archaeological or tribal cultural resources, the following additional actions shall be implemented prior to ground disturbance: <ul style="list-style-type: none"> ▪ UC Berkeley will retain a qualified archaeologist to conduct a subsurface investigation of the project site, and to ascertain the extent of the deposit of any buried archaeological materials relative to the project's area of potential effects. The archaeologist shall prepare a site record and file it with the California Historical Resource Information System. ▪ If the resource extends into the project's area of potential effects, the resource shall be evaluated by a qualified archaeologist. UC Berkeley shall consider this evaluation in determining whether the resource qualifies as a historical resource or a unique archaeological resource under the criteria of California Environmental Quality Act (CEQA) Guidelines Section 15064.5. <ul style="list-style-type: none"> ▪ If the resource does not qualify, no further mitigation is required unless there is a discovery of additional resources during construction (as required above for all construction projects with ground-disturbing activities). ▪ If a resource is determined to qualify as an historical resource or a unique archaeological resource in accordance with CEQA, UC Berkeley shall consult with a qualified archaeologist to mitigate the effect through data recovery if appropriate to the resource or, if data recovery is infeasible, to consider means of avoiding or reducing ground disturbance within the site boundaries, including where and if feasible, minor modifications of building footprint, landscape modification, the placement of protective fill, the establishment of a preservation easement, or other means that would permit avoidance or substantial preservation in place of the resource. A written report of the results of investigations shall be
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2. EXECUTIVE SUMMARY

TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

		prepared by a qualified archaeologist and filed with the University Archives/ Bancroft Library and the California Historic Resources Information System Northwest Information Center.	
CUL-4: The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in significant cumulative impacts with respect to cultural resources.	S	CUL-4: Implement Mitigation Measures CUL-1.1a through CUL-1.1e; CUL-1.2a and CUL-1b; CUL-1.3a and CUL-1.3b; CUL-1.4; CUL-1.5; and CUL-2.	SU
ENERGY			
<i>No significant impacts</i>			
GEOLOGY AND SOILS			
<i>No significant impacts</i>			
GREENHOUSE GAS EMISSIONS			
<i>No significant impacts</i>			
HAZARDS AND HAZARDOUS MATERIALS			
<i>No significant impacts</i>			
HYDROLOGY AND WATER QUALITY			
<i>No significant impacts</i>			
LAND USE AND PLANNING			
<i>No significant impacts</i>			
NOISE			
NOI-1: Noise from construction equipment could expose sensitive receptors to noise that exceeds the thresholds of significance.	S	NOI-1: For construction projects that last longer than 30 days, and where construction noise could exceed the applicable noise thresholds of significance (see City of Berkeley Municipal Code Section 13.40.070, Prohibited Acts, and City of Oakland Municipal Code Section 17.120.050(A), Noise (Residential Zone Noise Level Standards)) for maximum construction noise levels (dBA L _{max}), or that involve impulse equipment such as jackhammers, hoe rams, and pile driving, temporary noise barriers at least 12 feet high will be erected, as necessary and feasible, to reduce construction noise levels. Temporary noise barriers will be constructed with solid material with a density of at least 1.5 pounds per square foot with no gaps from the ground to the top of the temporary noise barrier and may be lined on the construction side	SU

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TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

NOI-2: Construction could result in excessive groundborne vibration to nearby sensitive receptors.	S	with an acoustical blanket, curtain, or equivalent absorptive material. UC Berkeley shall verify compliance with this measure prior to issuance of demolition, grading, and/or building permits.																																																	
		NOI-2: If any vibration causing construction activities/equipment are anticipated to be used for future development projects, UC Berkeley shall implement the following steps to ensure impacts from vibration causing construction activities/equipment will be less than significant.	LTS																																																
		<ul style="list-style-type: none"> ▪ Step 1 (Activity/Equipment Screening Distances): UC Berkeley shall use the construction vibration screening standards shown below based on Federal Transit Administration criteria to determine if the construction activity/equipment is within the vibration screening distances that could cause building damage/human annoyance or sensitive equipment disturbance. If the construction activity/equipment is within the screening distance, then Step 2 (Alternative Methods/Equipment) shall be implemented. 																																																	
		<table border="1"> <thead> <tr> <th colspan="4">Screening Distances to PPV in/sec Threshold: Building Damage</th></tr> <tr> <th>Activity/Equipment</th><th>Reference Vibration Levels (in/sec PPV) at 25 feet</th><th>Screening Level Distance in feet for 0.20 in/sec PPV ^a</th><th>Screening Level Distance in feet for 0.12 in/sec PPV ^b</th></tr> </thead> <tbody> <tr> <td>Pile Driving</td><td>1.518</td><td>97</td><td>136</td></tr> <tr> <td>Caisson Drilling</td><td>0.089</td><td>15</td><td>21</td></tr> <tr> <td>Vibratory Roller</td><td>0.21</td><td>26</td><td>37</td></tr> <tr> <td>Large Bulldozer</td><td>0.089</td><td>15</td><td>21</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Screening Distance to VdB Threshold: Human Annoyance and Sensitive Equipment Disturbance</th></tr> <tr> <th>Activity/Equipment</th><th>Reference Vibration Levels (VdB) at 25 feet</th><th>Screening Level Distance in feet for 72 VdB ^c</th><th>Screening Level Distance in feet for 65 VdB ^d</th></tr> </thead> <tbody> <tr> <td>Pile Driving</td><td>112</td><td>520</td><td>890</td></tr> <tr> <td>Caisson Drilling</td><td>87</td><td>80</td><td>140</td></tr> <tr> <td>Vibratory Roller</td><td>94</td><td>140</td><td>240</td></tr> <tr> <td>Large Bulldozer</td><td>87</td><td>80</td><td>140</td></tr> </tbody> </table> <p>Notes: Peak Particle Velocity inches per second (PPV in/sec); Vibration Decibel (VdB). a. FTA Building Category III, Non-engineered timber and masonry buildings (residential). b. FTA Building Category IV, Buildings extremely susceptible to vibration damage (historic). c. FTA Land Use Category 2, Residences and buildings where people normally sleep. d. FTA Land Use Category 1, Buildings where vibration would interfere with interior operations. Source: Federal Transit Administration, 2018, Transit Noise and Vibration Impact Assessment.</p>	Screening Distances to PPV in/sec Threshold: Building Damage				Activity/Equipment	Reference Vibration Levels (in/sec PPV) at 25 feet	Screening Level Distance in feet for 0.20 in/sec PPV ^a	Screening Level Distance in feet for 0.12 in/sec PPV ^b	Pile Driving	1.518	97	136	Caisson Drilling	0.089	15	21	Vibratory Roller	0.21	26	37	Large Bulldozer	0.089	15	21	Screening Distance to VdB Threshold: Human Annoyance and Sensitive Equipment Disturbance				Activity/Equipment	Reference Vibration Levels (VdB) at 25 feet	Screening Level Distance in feet for 72 VdB ^c	Screening Level Distance in feet for 65 VdB ^d	Pile Driving	112	520	890	Caisson Drilling	87	80	140	Vibratory Roller	94	140	240	Large Bulldozer	87	80	140	
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		<ul style="list-style-type: none"> ▪ Step 2 (Alternative Methods/Equipment): When the anticipated vibration-causing construction activity/equipment is within the screening standards in Step 1 (Activity/Equipment Screening Distances), UC Berkeley shall consider whether alternative 																																																	

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2. EXECUTIVE SUMMARY

TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

methods/equipment are available and shall verify that the alternative method/equipment is shown on the construction plans prior to the beginning of construction. Alternative methods/equipment may include, but are not limited to:

- For pile driving, the use of caisson drilling (drill piles) vibratory pile drivers, oscillating or rotating pile installation methods, and jetting or partial jetting of piles into place using a water injection at the tip of the pile shall be used, where feasible.
- For paving, use of a static roller in lieu of a vibratory roller shall be implemented.
- For grading and earthwork activities, off-road equipment that shall be limited to 100 horsepower or less.

Where alternative methods/equipment to vibration causing activities/equipment are not feasible, then Step 3 (Construction Vibration Monitoring Program) shall be implemented.

- **Step 3 (Construction Vibration Monitoring Program):** Prior to any project-related excavation, demolition or construction activity for projects within the screening distances listed in Step 1 (Activity/Equipment Screening Distances) and where alternative methods/equipment to vibration causing activities/equipment are not feasible pursuant to Step 2 (Alternative Methods/Equipment), UC Berkeley shall prepare a construction vibration monitoring program. The program shall be prepared and implemented by a qualified acoustical consultant or structural engineer. Where the vibration sensitive receptors are historic resources, the program shall be prepared and implemented by a structural engineer with a minimum of five years of experience in the rehabilitation and restoration of historic buildings and a historic preservation architect meeting the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, Professional Qualifications Standards. The program shall include the following:
 - Prepare an existing conditions study to establish the baseline condition of the vibration sensitive resources in the form of written descriptions with a photo survey, elevation survey, and crack-monitoring survey for the vibration-sensitive building or structure. The photo survey shall include internal and external

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TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

- crack monitoring in the structure, settlement, and distress, and document the condition of the foundation, walls and other structural elements in the interior and exterior of the building or structure. Surveys will be performed prior to, in regular intervals during, and after completion of all vibration-generating activity. Where receptors are historic resources, the study shall describe the physical characteristics of the resources that convey their historic significance.
- Determine the number, type, and location of vibration sensors and establish a vibration velocity limit (as determined based on a detailed review of the proposed building), method (including locations and instrumentation) for monitoring vibrations during construction, and method for alerting responsible persons who have the authority to halt construction should limits be exceeded or damaged observed.
 - Perform monitoring surveys prior to, in regular intervals during, and after completion of all vibration-generating activity and report any changes to existing conditions, including, but not limited to, expansion of existing cracks, new spalls, other exterior deterioration, or any problems with character-defining features of a historic resource are discovered. UC Berkeley shall establish the frequency of monitoring and reporting, based upon the recommendations of the qualified acoustical consultant or structural engineer or if there are historic buildings, the historic architect and structural engineer. Monitoring reports shall be submitted to UC Berkeley's designated representative responsible for construction activities.
 - Develop a vibration monitoring and construction contingency plan, which shall identify where monitoring would be conducted, establish a vibration monitoring schedule, define structure-specific vibration limits, and require photo, elevation, and crack surveys to document conditions before and after demolition and construction activities. Construction contingencies would be identified for when vibration levels approach the limits. If vibration levels approach limits, suspend construction and implement contingencies to either lower vibration levels or secure the affected structure.

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2. EXECUTIVE SUMMARY

TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

- Report substantial adverse impacts to vibration sensitive buildings including historic resources related to construction activities that are found during construction to UC Berkeley's designated representative responsible for construction activities. UC Berkeley's designated representative shall adhere to the monitoring team's recommendations for corrective measures, including halting construction or using different methods, in situations where demolition, excavation/construction activities would imminently endanger historic resources. UC Berkeley's designated representative would respond to any claims of damage by inspecting the affected property promptly, but in no case more than five working days after the claim was filed and received by UC Berkeley's designated representative. Any new cracks or other damage to any of the identified properties will be compared to pre-construction conditions and a determination made as to whether the proposed project could have caused such damage. In the event that the project is demonstrated to have caused any damage, such damage would be repaired to the pre-existing condition. Site visit reports and documents associated with claims processing would be provided to the relevant government body with jurisdiction over the neighboring historic resource, as necessary.
 - Conduct a post-survey on the structure where either monitoring has indicated high levels or complaints of damage and make appropriate repairs where damage has occurred as a result of construction activities.
 - Prepare a construction vibration monitoring report that summarizes the results of all vibration monitoring and submit the report after the completion of each phase identified in the project construction schedule. The vibration monitoring report shall include a description of measurement methods, equipment used, calibration certificates, and graphics as required to clearly identify vibration-monitoring locations. An explanation of all events that exceeded vibration limits shall be included together with proper documentation supporting any such claims. The construction vibration monitoring report shall be submitted to UC Berkeley with two weeks upon completion of each phase identified in the project construction schedule.
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TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

		<ul style="list-style-type: none"> Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person shall be clearly posted in one or more locations at the construction site. 	
NOI-3: The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to construction noise.	S	NOI-3: Implement Mitigation Measure NOI-1.	SU
POPULATION AND HOUSING			
<i>No significant impacts</i>			
PUBLIC SERVICES			
<i>No significant impacts</i>			
PARKS AND RECREATION			
<i>No significant impacts</i>			
TRANSPORTATION			
TRAN-3: New buildings and structures that are 100 feet or more in height, based on final exterior design, could create wind hazards at the pedestrian (ground) level.	S	TRAN-3: Prior to final exterior design approval of new buildings or structures that are 100 feet or more in height, the building or structure shall be analyzed for potential wind hazards at the pedestrian level in the public right-of-way around the project site. The wind hazards analysis shall be conducted by a qualified wind engineer using the final exterior plans. The analysis shall apply the industry-acceptable Lawson Criteria for pedestrian-level wind distress (safety) to identify locations where wind speeds may be hazardous to pedestrians in the public right-of-way around the project site. Where wind hazards are identified based on the final building or structure exterior designs, UC Berkeley, in consultation with the qualified wind engineer, shall identify feasible building or structure design refinements to reduce the hazardous wind effects to an acceptable level as determined by the qualified wind engineer using the Lawson Criteria. Feasible industry-standard wind reduction design refinements may include, but are not limited to, adjusted building setbacks, upper-floor building stepbacks, terraces, rounded or redesigned building corners, screens, canopies, or landscaping. Following the identification of feasible design refinements by UC Berkeley in consultation with the qualified wind engineer, the qualified wind engineer shall provide evidence of acceptable (i.e., nonhazardous) wind effects with the incorporation of	SU

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2. EXECUTIVE SUMMARY

TABLE 2-3 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #1

		the feasible building or structure exterior design refinements. The results of the wind analysis and the feasible and effective design refinements to reduce wind hazards shall be submitted to the UC Berkeley project manager for review prior to final design approval.	
TRAN-5: The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to wind hazards at the pedestrian (ground) level.	S	TRAN-5: Implement Mitigation Measure TRAN-3.	SU
TRIBAL CULTURAL RESOURCES			
TCR-1: Ground-disturbing activities could encounter and cause a substantial adverse change to tribal cultural resources.	S	TCR-1: Implement Mitigation Measure CUL-2.	LTS
UTILITIES AND SERVICE SYSTEMS			
<i>No significant impacts</i>			
WILDFIRE			
<i>No significant impacts</i>			

2.6.4 HOUSING PROJECT #2 SIGNIFICANT IMPACT SUMMARY

This table provides a brief review of the significant impact conclusions identified from the project-level environmental analysis for the proposed Housing Project #2 contained in Chapters 5.1 through 5.18 of this Draft EIR. As shown in Table 2-4, the LRDP Update would result in significant impacts related to cultural resources and noise.

TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
AESTHETICS			
<i>No significant impacts</i>			
AIR QUALITY			
<i>No significant impacts</i>			

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TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
BIOLOGICAL RESOURCES			
BIO-4: New buildings and structures would create potential impacts associated with increased risk of bird collisions.	S	BIO-4: Structures and buildings that are new or are taller than existing structures and buildings shall be designed to minimize the potential risk of bird collisions. This should at a minimum include the following design considerations and management strategies: (1) avoid the use of highly reflective glass as an exterior treatment, which appears to reproduce natural habitat and can be attractive to some birds; (2) limit reflectivity and prevent exterior glass from attracting birds in building plans by utilizing low-reflectivity glass and providing other non-attractive surface treatments; (3) use low-reflectivity glass or other bird safe glazing treatments for the majority of the building's glass surface, not just the lower levels; (4) for office and commercial buildings, interior light "pollution" should be reduced during evening hours through the use of a lighting control system programmed to shut off during non-work hours and between 10 p.m. and sunrise; (5) exterior lighting should be directed downward and screened to minimize illuminating the exterior of the building at night, except as needed for safety and security; (6) untreated glass skyways or walkways, freestanding glass walls, and transparent building corners should be avoided; (7) transparent glass should not be allowed at the rooflines of buildings, including in conjunction with green roofs; and (8) all roof mechanical equipment should preferably be covered by low-profile angled roofing or other treatments so that obstacles to bird flight are minimized. These strategies shall be incorporated at the direction of the Campus Architect during plan review, and the Campus Architect shall confirm the incorporation of these strategies into architectural plans prior to building construction.	LTS
CULTURAL RESOURCES			
CUL-1.3: Housing Project #2 would demolish and reconfigure People's Park, a designated City of Berkeley Historical Landmark, which would result in a substantial adverse change to a historic resource.	S	CUL-1.3a: Implement Mitigation Measure CUL-1.1b. CUL-1.3b: Implement Mitigation Measure CUL-1.1d.	SU
CUL-1.4: The proposed use of pile driving during construction of Housing Project #2 could produce significant ground vibration or	S	CUL-1.4: Implement Mitigation Measure CUL-1.1e.	LTS

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2. EXECUTIVE SUMMARY

TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
soil movement under or adjacent to the existing foundations of nearby historical resources, compromising their structural integrity.			
CUL-1.5: The design of Housing Project #2 may impair the integrity of one or more of the 10 historical resources in the immediate vicinity of People's Park through incompatible design.	S	CUL-1.5: Prior to approval of final design plans for Housing Project #2, UC Berkeley shall retain an architect meeting the National Park Service Professional Qualifications Standards for historic architecture to review plans for the proposed student housing and affordable and supportive housing buildings. The historic architect shall provide input and refinements to the design team regarding fenestration patterns, entry design, and the palette of exterior materials to improve compatibility with neighboring historical resources and to enhance compliance with the Secretary of the Interior's Standards and the City of Berkeley Southside Design Guidelines.	SU
CUL-2: The proposed project has the potential to disturb unknown archaeological resources that could exist beneath the depth of previous ground disturbances and result in a significant impact to an archaeological resource.	S	<p>CUL-2: For construction projects that include substantial ground-disturbing activities (including, but not limited to, soil removal, parcel grading, new utility trenching, and foundation-related excavation), UC Berkeley shall implement the following steps to ensure impacts to archaeological resources will be less than significant.</p> <ul style="list-style-type: none"> ▪ All Projects with Ground-Disturbing Activities. <ul style="list-style-type: none"> ▪ Prior to soil disturbance, UC Berkeley shall confirm that contractors have been notified of the procedures for the identification of federal- or State-eligible cultural resources, and that the construction crews are aware of the potential for previously undiscovered archaeological resources or tribal cultural resources on site, of the laws protecting these resources and associated penalties, and of the procedures to follow should they discover cultural resources during project-related work. ▪ If a resource is discovered during construction (whether or not an archaeologist is present), the following measures shall be implemented: <ul style="list-style-type: none"> ▪ All soil disturbing work within 35 feet of the find shall cease. ▪ UC Berkeley shall contact a qualified archaeologist to provide and implement a plan for survey, subsurface investigation as needed to define the deposit, and assessment of the 	LTS

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TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>remainder of the site within the project area to determine whether the resource is significant and would be affected by the project.</p> <ul style="list-style-type: none"> Any previously undiscovered resources found during construction activities shall be recorded on appropriate California Department of Parks and Recreation forms and evaluated for significance in terms of the California Environmental Quality Act (CEQA) criteria by a qualified archaeologist. If the resource is a tribal cultural resource, the consulting archaeologist shall consult with the appropriate tribe to evaluate the significance of the resource and to recommend appropriate and feasible avoidance, testing, preservation or mitigation measures, in light of factors such as the significance of the find, proposed project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) may be implemented. If the resource is a non-tribal resource determined significant under CEQA, the qualified archaeologist shall prepare and implement a research design and archaeological data recovery plan that will capture those categories of data for which the site is significant. The archaeologist shall also perform appropriate technical analyses; prepare a comprehensive report complete with methods, results, and recommendations; and provide for the permanent curation of the recovered resources if appropriate. The report shall be submitted to the relevant city (if it falls under Berkeley or Oakland boundaries), California Historic Resources Information System Northwest Information Center, and the State Historic Preservation Office, if required. <p>▪ Areas with High Archaeological Sensitivity. In addition to the requirements above for all construction projects with ground-</p>	

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2. EXECUTIVE SUMMARY

TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>disturbing activities, for project in areas with moderately high to extreme archaeological sensitivity (as shown on the confidential Figure 11, Prehistoric Cultural Sensitivity Overlay Analysis Results, prepared for the 2021 LRDP Update EIR) ground disturbance activities shall be monitored. Monitoring shall occur for soil removal, parcel grading, new utility trenching, and foundation-related excavation in those areas that extend into previously undisturbed soils. Archaeological monitoring must be undertaken by a qualified archaeologist or the appropriate tribe, if the resources are tribal, who is familiar with a wide range of prehistoric archaeological or tribal remains: artifact identification, human and faunal bone, soil descriptions, and interpretation. Based on project-specific daily construction schedules, field conditions, and archaeological observations, full-time monitoring may not be warranted following initial observations.</p> <ul style="list-style-type: none"> ▪ Sites with Known Archaeological Resources. In the event the disturbance of a site with known archaeological or tribal cultural resources cannot be avoided, in addition to the requirements above for all construction projects with ground-disturbing activities, for project sites with known on-site archaeological or tribal cultural resources, the following additional actions shall be implemented prior to ground disturbance: <ul style="list-style-type: none"> ▪ UC Berkeley will retain a qualified archaeologist to conduct a subsurface investigation of the project site, and to ascertain the extent of the deposit of any buried archaeological materials relative to the project's area of potential effects. The archaeologist shall prepare a site record and file it with the California Historical Resource Information System. ▪ If the resource extends into the project's area of potential effects, the resource shall be evaluated by a qualified archaeologist. UC Berkeley shall consider this evaluation in determining whether the resource qualifies as a historical resource or a unique archaeological resource under the criteria 	

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TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>of California Environmental Quality Act (CEQA) Guidelines Section 15064.5.</p> <ul style="list-style-type: none"> ▪ If the resource does not qualify, no further mitigation is required unless there is a discovery of additional resources during construction (as required above for all construction projects with ground-disturbing activities). ▪ If a resource is determined to qualify as an historical resource or a unique archaeological resource in accordance with CEQA, UC Berkeley shall consult with a qualified archaeologist to mitigate the effect through data recovery if appropriate to the resource or, if data recovery is infeasible, to consider means of avoiding or reducing ground disturbance within the site boundaries, including where and if feasible, minor modifications of building footprint, landscape modification, the placement of protective fill, the establishment of a preservation easement, or other means that would permit avoidance or substantial preservation in place of the resource. A written report of the results of investigations shall be prepared by a qualified archaeologist and filed with the University Archives/ Bancroft Library and the California Historic Resources Information System Northwest Information Center. 	
CUL-4: The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in significant cumulative impacts with respect to cultural resources.	S	CUL-4: Implement Mitigation Measures CUL-1.1a through CUL-1.1e; CUL-1.2a and CUL-1b; CUL-1.3a and CUL-1.3b; CUL-1.4; CUL-1.5; and CUL-2.	SU
ENERGY			
<i>No significant impacts</i>			
GEOLOGY AND SOILS			
<i>No significant impacts</i>			
GREENHOUSE GAS EMISSIONS			
<i>No significant impacts</i>			

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2. EXECUTIVE SUMMARY

TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
HAZARDS AND HAZARDOUS MATERIALS			
<i>No significant impacts</i>			
HYDROLOGY AND WATER QUALITY			
<i>No significant impacts</i>			
LAND USE AND PLANNING			
<i>No significant impacts</i>			
NOISE			
NOI-1: Noise from construction equipment could expose sensitive receptors to noise that exceeds the thresholds of significance.	S	NOI-1: For construction projects that last longer than 30 days, and where construction noise could exceed the applicable noise thresholds of significance (see City of Berkeley Municipal Code Section 13.40.070, Prohibited Acts, and City of Oakland Municipal Code Section 17.120.050(A), Noise (Residential Zone Noise Level Standards)) for maximum construction noise levels (dBA L _{max}), or that involve impulse equipment such as jackhammers, hoe rams, and pile driving, temporary noise barriers at least 12 feet high will be erected, as necessary and feasible, to reduce construction noise levels. Temporary noise barriers will be constructed with solid material with a density of at least 1.5 pounds per square foot with no gaps from the ground to the top of the temporary noise barrier and may be lined on the construction side with an acoustical blanket, curtain, or equivalent absorptive material. UC Berkeley shall verify compliance with this measure prior to issuance of demolition, grading, and/or building permits.	SU
NOI-2: Construction could result in excessive groundborne vibration to nearby sensitive receptors.	S	NOI-2: If any vibration causing construction activities/equipment are anticipated to be used for future development projects, UC Berkeley shall implement the following steps to ensure impacts from vibration causing construction activities/equipment will be less than significant. Step 1 (Activity/Equipment Screening Distances): UC Berkeley shall use the construction vibration screening standards shown below based on Federal Transit Administration criteria to determine if the construction activity/equipment is within the vibration screening distances that could cause building damage/human annoyance or	LTS

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TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		sensitive equipment disturbance. If the construction activity/equipment is within the screening distance, then Step 2 (Alternative Methods/Equipment) shall be implemented.	
Screening Distances to PPV in/sec Threshold: Building Damage			
Activity/Equipment	Reference Vibration Levels (in/sec PPV) at 25 feet	Screening Level Distance in feet for 0.20 in/sec PPV ^a	Screening Level Distance in feet for 0.12 in/sec PPV ^b
Pile Driving	1.518	97	136
Caisson Drilling	0.089	15	21
Vibratory Roller	0.21	26	37
Large Bulldozer	0.089	15	21
Screening Distance to VdB Threshold: Human Annoyance and Sensitive Equipment Disturbance			
Activity/Equipment	Reference Vibration Levels (VdB) at 25 feet	Screening Level Distance in feet for 72 VdB ^c	Screening Level Distance in feet for 65 VdB ^d
Pile Driving	112	520	890
Caisson Drilling	87	80	140
Vibratory Roller	94	140	240
Large Bulldozer	87	80	140
Notes: Peak Particle Velocity inches per second (PPV in/sec); Vibration Decibel (VdB). a. FTA Building Category III, Non-engineered timber and masonry buildings (residential). b. FTA Building Category IV, Buildings extremely susceptible to vibration damage (historic). c. FTA Land Use Category 2, Residences and buildings where people normally sleep. d. FTA Land Use Category 1, Buildings where vibration would interfere with interior operations. Source: Federal Transit Administration, 2018, Transit Noise and Vibration Impact Assessment.			
		Step 2 (Alternative Methods/Equipment): When the anticipated vibration-causing construction activity/equipment is within the screening standards in Step 1 (Activity/Equipment Screening Distances), UC Berkeley shall consider whether alternative methods/equipment are available and shall verify that the alternative method/equipment is shown on the construction plans prior to the beginning of construction. Alternative methods/equipment may include, but are not limited to: <ul style="list-style-type: none"> For pile driving, the use of caisson drilling (drill piles) vibratory pile drivers, oscillating or rotating pile installation methods, and jetting or partial jetting of piles into place using a water injection at the tip of the pile shall be used, where feasible. 	

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2. EXECUTIVE SUMMARY

TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<ul style="list-style-type: none"> For paving, use of a static roller in lieu of a vibratory roller shall be implemented. For grading and earthwork activities, off-road equipment that shall be limited to 100 horsepower or less. <p>Where alternative methods/equipment to vibration causing activities/equipment are not feasible, then Step 3 (Construction Vibration Monitoring Program) shall be implemented.</p> <ul style="list-style-type: none"> Step 3 (Construction Vibration Monitoring Program): Prior to any project-related excavation, demolition or construction activity for projects within the screening distances listed in Step 1 (Activity/Equipment Screening Distances) and where alternative methods/equipment to vibration causing activities/equipment are not feasible pursuant to Step 2 (Alternative Methods/Equipment), UC Berkeley shall prepare a construction vibration monitoring program. The program shall be prepared and implemented by a qualified acoustical consultant or structural engineer. Where the vibration sensitive receptors are historic resources, the program shall be prepared and implemented by a structural engineer with a minimum of five years of experience in the rehabilitation and restoration of historic buildings and a historic preservation architect meeting the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, Professional Qualifications Standards. The program shall include the following: <ul style="list-style-type: none"> Prepare an existing conditions study to establish the baseline condition of the vibration sensitive resources in the form of written descriptions with a photo survey, elevation survey, and crack-monitoring survey for the vibration-sensitive building or structure. The photo survey shall include internal and external crack monitoring in the structure, settlement, and distress, and document the condition of the foundation, walls and other structural elements in the interior and exterior of the building or structure. Surveys will be performed prior to, in regular intervals during, and after completion of all vibration-generating activity. 	

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TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>Where receptors are historic resources, the study shall describe the physical characteristics of the resources that convey their historic significance.</p> <ul style="list-style-type: none"> ▪ Determine the number, type, and location of vibration sensors and establish a vibration velocity limit (as determined based on a detailed review of the proposed building), method (including locations and instrumentation) for monitoring vibrations during construction, and method for alerting responsible persons who have the authority to halt construction should limits be exceeded or damaged observed. ▪ Perform monitoring surveys prior to, in regular intervals during, and after completion of all vibration-generating activity and report any changes to existing conditions, including, but not limited to, expansion of existing cracks, new spalls, other exterior deterioration, or any problems with character-defining features of a historic resource are discovered. UC Berkeley shall establish the frequency of monitoring and reporting, based upon the recommendations of the qualified acoustical consultant or structural engineer or if there are historic buildings, the historic architect and structural engineer. Monitoring reports shall be submitted to UC Berkeley's designated representative responsible for construction activities. ▪ Develop a vibration monitoring and construction contingency plan, which shall identify where monitoring would be conducted, establish a vibration monitoring schedule, define structure-specific vibration limits, and require photo, elevation, and crack surveys to document conditions before and after demolition and construction activities. Construction contingencies would be identified for when vibration levels approach the limits. If vibration levels approach limits, suspend construction and implement contingencies to either lower vibration levels or secure the affected structure. ▪ Report substantial adverse impacts to vibration sensitive buildings including historic resources related to construction 	

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2. EXECUTIVE SUMMARY

TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		<p>activities that are found during construction to UC Berkeley's designated representative responsible for construction activities. UC Berkeley's designated representative shall adhere to the monitoring team's recommendations for corrective measures, including halting construction or using different methods, in situations where demolition, excavation/construction activities would imminently endanger historic resources. UC Berkeley's designated representative would respond to any claims of damage by inspecting the affected property promptly, but in no case more than five working days after the claim was filed and received by UC Berkeley's designated representative. Any new cracks or other damage to any of the identified properties will be compared to pre-construction conditions and a determination made as to whether the proposed project could have caused such damage. In the event that the project is demonstrated to have caused any damage, such damage would be repaired to the pre-existing condition. Site visit reports and documents associated with claims processing would be provided to the relevant government body with jurisdiction over the neighboring historic resource, as necessary.</p> <ul style="list-style-type: none"> ▪ Conduct a post-survey on the structure where either monitoring has indicated high levels or complaints of damage and make appropriate repairs where damage has occurred as a result of construction activities. ▪ Prepare a construction vibration monitoring report that summarizes the results of all vibration monitoring and submit the report after the completion of each phase identified in the project construction schedule. The vibration monitoring report shall include a description of measurement methods, equipment used, calibration certificates, and graphics as required to clearly identify vibration-monitoring locations. An explanation of all events that exceeded vibration limits shall be included together with proper documentation supporting any such claims. The construction vibration monitoring report shall be submitted to 	

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TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		UC Berkeley with two weeks upon completion of each phase identified in the project construction schedule. <ul style="list-style-type: none"> Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person shall be clearly posted in one or more locations at the construction site. 	
NOI-3: The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to construction noise.	S	NOI-3: Implement Mitigation Measure NOI-1.	SU
POPULATION AND HOUSING			
<i>No significant impacts</i>			
PUBLIC SERVICES			
<i>No significant impacts</i>			
PARKS AND RECREATION			
<i>No significant impacts</i>			
TRANSPORTATION			
TRAN-3: New buildings and structures that are 100 feet or more in height, based on final exterior design, could create wind hazards at the pedestrian (ground) level.	S	TRAN-3: Prior to final exterior design approval of new buildings or structures that are 100 feet or more in height, the building or structure shall be analyzed for potential wind hazards at the pedestrian level in the public right-of-way around the project site. The wind hazards analysis shall be conducted by a qualified wind engineer using the final exterior plans. The analysis shall apply the industry-acceptable Lawson Criteria for pedestrian-level wind distress (safety) to identify locations where wind speeds may be hazardous to pedestrians in the public right-of-way around the project site. Where wind hazards are identified based on the final building or structure exterior designs, UC Berkeley, in consultation with the qualified wind engineer, shall identify feasible building or structure design refinements to reduce the hazardous wind effects to an acceptable level as determined by the qualified wind engineer using the Lawson Criteria. Feasible industry-standard wind reduction design	SU

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2. EXECUTIVE SUMMARY

TABLE 2-4 SIGNIFICANT IMPACTS AND MITIGATION MEASURES FOR HOUSING PROJECT #2

Impact	Significance without Mitigation	Mitigation Measures	Significance with Mitigation
		refinements may include, but are not limited to, adjusted building setbacks, upper-floor building stepbacks, terraces, rounded or redesigned building corners, screens, canopies, or landscaping. Following the identification of feasible design refinements by UC Berkeley in consultation with the qualified wind engineer, the qualified wind engineer shall provide evidence of acceptable (i.e., nonhazardous) wind effects with the incorporation of the feasible building or structure exterior design refinements. The results of the wind analysis and the feasible and effective design refinements to reduce wind hazards shall be submitted to the UC Berkeley project manager for review prior to final design approval.	
TRAN-5: The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to wind hazards at the pedestrian (ground) level.	S	TRAN-5: Implement Mitigation Measure TRAN-3.	SU
TCR-1: Ground-disturbing activities could encounter and cause a substantial adverse change to tribal cultural resources.	S	TCR-1: Implement Mitigation Measure CUL-2.	LTS
UTILITIES AND SERVICE SYSTEMS			
<i>No significant impacts</i>			
WILDFIRE			
<i>No significant impacts</i>			

LTS = LESS THAN SIGNIFICANT; S = SIGNIFICANT; SU = SIGNIFICANT AND UNAVOIDABLE

3. Project Description

This chapter of the Draft Environmental Impact Report (EIR) describes the University of California, Berkeley 2021 Long Range Development Plan (LRDP Update) and Housing Projects #1 and #2 Project, herein referred to as the “proposed project.” The proposed LRDP Update would guide future development within UC Berkeley’s planning area, including the proposed mixed-use development projects on two sites. When referring to the program only, the term “proposed LRDP Update” is used, and when referring to the proposed mixed-use developments, the terms “proposed Housing Project #1” and “proposed Housing Project #2” are used.

This chapter provides an overview of the proposed project, including the background and planning process, and describes the intended uses of the EIR, project objectives, the project’s location, regulatory setting, and EIR Study Area. Section 3.5, Components of the Proposed Project, provides a detailed description of the proposed LRDP Update and the construction and operation of proposed Housing Projects #1 and #2. Section 3.6 describes permits and approvals anticipated for implementing the proposed project.

3.1 OVERVIEW

3.1.1 LRDP BACKGROUND

The University of California, Berkeley campus (UC Berkeley campus) is one of 10 campuses within the University of California (UC) system. Each campus in the UC system periodically prepares an LRDP, which provides a high-level planning framework to guide land use and capital investment consistent with its mission, priorities, strategic goals, and enrollment projections. The purpose of an LRDP is to provide adequate planning capacity for potential population growth and physical infrastructure that may be needed to support future population levels on each UC campus. The LRDP does not mandate growth or the provision of new facilities. Varying factors affect whether population levels increase, decrease, or remain unchanged, and the provision of new facilities or any specific project may or may not occur with the increased population. State policies require the UC to meet a proportion of California high school graduates eligible to enroll in state universities. The California Master Plan for Higher Education¹ guarantees access to the UC campuses for the top 12.5 percent of the state’s public high school graduates and qualified transfer students from California community colleges.² State policies do not apply to the UC Berkeley graduate program; thus, UC Berkeley has more control over its graduate student population than it does over its undergraduate program. In the event that population growth does occur at the UC Berkeley

¹ University of California, Office of the President. *California Master Plan for Higher Education*, <https://www.ucop.edu/institutional-research-academic-planning/content-analysis/academic-planning/california-master-plan.html>, accessed October 4, 2020.

² Legislative Analyst’s Office, 2017. *Assessing UC and CSU Enrollment Capacity*. <https://lao.ca.gov/Publications/Report/3532#Conclusion>, accessed August 3, 2020.

3. PROJECT DESCRIPTION

campus, the LRDP provides a guide to the land development patterns and associated physical infrastructure that could be built to support a projected level of enrollment. The proposed LRDP Update does not set a maximum population limit that the campus can support physically. See Chapter 5.12, Population and Housing, for a more detailed discussion of population projections.

LRDPs do not expire but remain in effect until updated or replaced, so there is no set time frame when a new LRDP would be needed. The current LRDP for UC Berkeley was adopted in January 2005 and projected development needs through the academic year 2020–21. The current LRDP requires updating to reflect new priorities. The proposed LRDP Update analyzed in this EIR would replace the current LRDP and includes projections of student and faculty and staff populations; number of beds provided in UC Berkeley residential buildings; building square footage; and parking spaces. The purpose of the horizon year of the 2036–37 school year is to provide a defined period for identifying the development needed to accommodate projected enrollment and population growth, and for evaluating the associated long-range environmental impacts in this EIR. The proposed LRDP Update is not a detailed implementation plan for development and does not commit UC Berkeley to carrying out development on any given timeline. (See Section 3.5.1.7, Development Program, for detailed development projections.)

As part of the proposed LRDP Update, UC Berkeley plans to increase available student housing. The UC Berkeley campus has the lowest percentage of beds for the student body of any campus in the UC system, and the high cost of housing in the San Francisco Bay area limits the availability of housing options near campus. Since there is significant urgency to provide more student housing at the UC Berkeley campus, this EIR evaluates the physical environmental effects of the proposed LRDP Update development program, which includes two specific student housing projects, proposed Housing Project #1 and Housing Project #2.

3.1.2 PLANNING PROCESS

3.1.2.1 LRDP UPDATE

For the proposed LRDP Update, UC Berkeley engaged in a robust engagement process with the UC Berkeley community and the public, including a combination of in-person and online outreach. In-person outreach included individual meetings with stakeholder groups; regular meetings with project governance groups, including an LRDP Community Advisory Group; public town halls; briefings to City of Berkeley staff and officials; and informal drop-in sessions. In the fall of 2019, UC Berkeley held workshops with students, faculty, and staff on equity and inclusion, student experience, academic life, mobility and accessibility, housing, and sustainability and resilience. Online outreach has primarily been through the proposed LRDP Update website (<https://lrp.berkeley.edu/>), which provides relevant news updates, project documents, and forms to provide feedback. UC Berkeley provided an online survey that was available to the public from April through October 2019 and an online open house that was available to the public from May through August 2020 to share existing conditions information and solicit feedback on emerging ideas and principles.

The proposed LRDP Update process involved coordination between several key groups. The Chancellor and Executive Vice Chancellor and Provost of UC Berkeley sponsored the proposed LRDP Update, with the appointed advisory and working groups providing guidance at key milestones, and UC Berkeley's Capital Strategies team responsible for overall project management. UC Berkeley's LRDP Advisory and Working Groups included staff and divisional leadership from various departments throughout UC Berkeley, as well

as representatives for faculty, student, and other staff. Additional stakeholders consulted during the process included a range of internal audiences, external community groups, and the public. The internal UC Berkeley community included faculty, staff, and students; UC Berkeley committees and organizations; topical experts; and other UC Berkeley community members, such as alumni and visitors. Public agency stakeholders included, among others, Alameda-Contra Costa Transit (AC Transit), Bay Area Rapid Transit (BART), the City of Berkeley, Alameda County, the Metropolitan Transportation Commission, the Association of Bay Area Governments, and Lawrence Berkeley National Laboratory. External audiences included neighborhood residents, community organizations, local businesses, and the public. UC Berkeley appointed a community advisory group made up of various local community leaders from the surrounding neighborhoods and the Berkeley community at large.

3.1.2.2 HOUSING PROJECTS #1 AND #2

The shortage of available housing for UC Berkeley’s students and employees is a matter of urgent concern. In the summer of 2016, as a first step toward addressing this housing challenge, then-Chancellor Nicholas Dirks convened a housing task force that comprised a range of UC Berkeley representatives. In January 2017, the task force completed and issued the Draft Housing Master Plan Task Force Report, which offered a comprehensive and compelling discussion of the issues as well as a menu of options that could significantly expand the availability of housing for UC Berkeley’s students and faculty by 2020, including potential housing development sites. The proposed LRDP Update’s housing strategy is designed to meet the goals and needs identified in the Chancellor’s Housing Initiative, which was informed by the Draft Housing Master Plan Task Force Report.³

As part of a comprehensive effort to address the housing challenges facing UC Berkeley and its urban neighbors, UC Berkeley proposes to redevelop properties it now owns at the sites of proposed Housing Project #1 (Anchor House) and proposed Housing Project #2 (People’s Park).

3.1.3 INTENDED USES OF THE EIR

This EIR is intended to identify and assess potential environmental impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of proposed Housing Projects #1 and #2 and to determine corresponding mitigation measures, if necessary. This EIR provides a program-level analysis of the proposed LRDP Update and a project-level analysis of the proposed Housing Projects #1 and #2. This EIR does not evaluate project-level impacts of other specific projects that may be proposed in the future other than Housing Projects #1 and #2. All future development projects that qualify as a “project” under the California Environmental Quality Act (CEQA) are subject to compliance with CEQA, which may require additional, project-specific environmental analysis for entitlement. Therefore, though subsequent environmental review may tier off the program-level review in this EIR, this EIR is not intended to provide project-level environmental review of specific future individual projects other than proposed Housing Projects #1 and #2. For more description of program- and project-level review and tiering, see Chapter 1, Introduction, of this Draft EIR.

³ University of California, Berkeley Office of the Chancellor, 2020. Housing Initiative. <https://chancellor.berkeley.edu/housing-initiative>, accessed August 14, 2020.

3.2 PROJECT OBJECTIVES

This section has been prepared pursuant to CEQA Guidelines Section 15124 and describes the project objectives for the approval and implementation of the proposed LRDP Update and the construction and operation of proposed Housing Projects #1 and #2. The primary purpose of the proposed LRDP Update is to create a framework for future development on UC Berkeley properties, and the primary purpose of proposed Housing Projects #1 and #2 is to provide housing and campus life facilities (e.g., nonacademic uses such as recreation, commercial, restaurant, wellness, social spaces) for students and faculty. The following provides the objectives for the proposed project organized by project component (LRDP Update, Housing Project #1, and Housing Project #2).

3.2.1 LRDP UPDATE OBJECTIVES

- Maintain the Campus Park as the central location for academic life, research, and student life uses as well as student services, and provide a range of adaptable and multipurpose spaces required to promote excellence and leadership in teaching, research, and public service consistent with UC Berkeley's mission and Strategic Plan. Prioritize administrative and student life facilities in locations adjacent to but off of the Campus Park.
- Improve the existing housing portfolio by providing additional new and renovated safe, secure, accessible, and high-quality housing units/beds for undergraduate and graduate students, faculty, and staff required to support a vital inclusive and intellectual community and promote full engagement in campus life in support of the Chancellor's Housing Initiative.
- Improve the existing campus life spaces and provide new accessible, inclusive, and dynamic indoor and outdoor campus life spaces to provide an interconnected natural and built environment with a shared sense of community, interaction, and wellness.
- Maintain natural areas as well as generous natural and built open spaces on the Campus Park and the Clark Kerr Campus.
- Maintain the Hill Campus East as open space that is managed to reduce wildfire risk and as a resource for research and energy resilience, focusing potential development on suitable sites.
- Plan every new project (i.e., renovation, strategic infill/ additions, and new construction) to support the optimal investment of resources, meet space needs and improve space utilization, and address deferred maintenance.
- Further UC Berkeley as a leader in sustainability and meet and strive to exceed UC Berkeley sustainability goals and the goals of the UC Sustainable Practices Policy, Carbon Neutrality Initiative, and Seismic Safety policy.
- Take advantage of UC Berkeley's urban location to prioritize mobility system improvements that promote an accessible, efficient, sustainable, and safe campus.
- Minimize private vehicle access in the Campus Park and prioritize transit, bicycle, and pedestrian access to and across the Campus Park to decrease carbon emissions, congestion, and parking demand.
- Prioritize improvements and create clearly defined routes for bicycle, pedestrian, transit, and micromobility networks to enhance UC Berkeley campus connectivity and safety, to make navigation more intuitive and inclusive, and to ensure access to the campus by all UC Berkeley constituents.

- Plan for a more resilient UC Berkeley campus to protect human health and safety, maintain essential infrastructure services and operational continuity, preserve investment in the physical campus, cultivate adaptable natural systems.
- Maintain and enhance the image and experience of the UC Berkeley campus and support the continuing evolution of the UC Berkeley campus's notable and historic landscapes and architecture.
- Enhance the connectivity between UC Berkeley and surrounding areas through continued support of community partnerships and public programming in areas of shared interest, and the design of campus edges and UC Berkeley-owned properties in the community.
- Maintain, support, and enhance UC Berkeley's status as an internationally renowned, 21st-century, public research-intensive university and center for scientific and academic advancement by expanding its graduate and professional schools, policy institutes, research programs, laboratories, and institutions.

3.2.2 HOUSING PROJECT #1 OBJECTIVES

- Redevelop an underutilized UC Berkeley property to provide safe, secure, accessible, and high-quality student housing to help meet the student housing needs of UC Berkeley in support of the Chancellor's Housing Initiative; the project will target providing housing for transfer students, as this group typically has the most difficulty securing UC Berkeley housing.
- Create accessible student housing with no residential parking that is adjacent to the Campus Park to reduce vehicle miles traveled and associated air quality, greenhouse gas emissions, and noise to help achieve the goals of the UC Carbon Neutrality Initiative.
- Provide sustainability features to support meeting or exceeding the UC system and UC Berkeley sustainability goals, such as providing rooftop solar PV panels; installing sun shades above all east-, south-, and west-facing apartment windows; generating no new net stormwater runoff; and landscaping with native and/or adaptive and drought-resistant plant materials.
- Provide essential amenities and campus life facilities to foster a vibrant, convenient, and well-served student community with a variety of indoor uses and outdoor spaces that provide connections between the natural and built environment for a shared sense of community, interaction, and wellness.
- Provide an architecturally distinctive project with high quality materials and ground level landscaping that will contribute positively to the City Environs Properties in Downtown Berkeley and support the continuing evolution of the UC Berkeley campus's notable and historic landscapes and architecture.
- Enhance the vibrancy of the City Environs Properties and the sense of community enjoyed by UC Berkeley affiliates and City of Berkeley residents by providing a pedestrian-friendly project that includes housing, open space and greenery, office space, and activated ground floor uses, which may include neighborhood retail.

3.2.3 HOUSING PROJECT #2 OBJECTIVES

- Redevelop and revitalize a UC Berkeley property to provide safe, secure, high quality, and high density student housing to help meet the student housing needs of UC Berkeley in support of the Chancellor's Housing Initiative.
- Provide affordable and supportive housing to the greater Berkeley and Bay Area community.

3. PROJECT DESCRIPTION

- Create accessible student housing with no residential parking and affordable and supportive housing with limited employee parking that is in close proximity to the Campus Park to reduce vehicle miles traveled and associated air quality, greenhouse gas emissions, and noise to help achieve the goals of the UC Carbon Neutrality Initiative.
- Provide sustainability features to support meeting or exceeding the UC system and UC Berkeley sustainability goals, such as providing rooftop solar PV panels on each building, installing lighting controls to reduce energy use, using only LED light sources, and landscaping with native and/or adaptive and drought-resistant plant materials.
- Provide essential amenities and campus life facilities to foster a vibrant, convenient, and well-served student community with a variety of indoor uses and outdoor, landscaped open space that provides connections between the natural and built environment for a shared sense of community, interaction, and wellness.
- Provide an architecturally distinctive project with high quality materials and ground level landscaping that will contribute positively to the City Environs Properties in South Berkeley and support the continuing evolution of the UC Berkeley campus's notable and historic landscapes and architecture.
- Preserve healthy, mature trees on the project site to the greatest extent feasible.

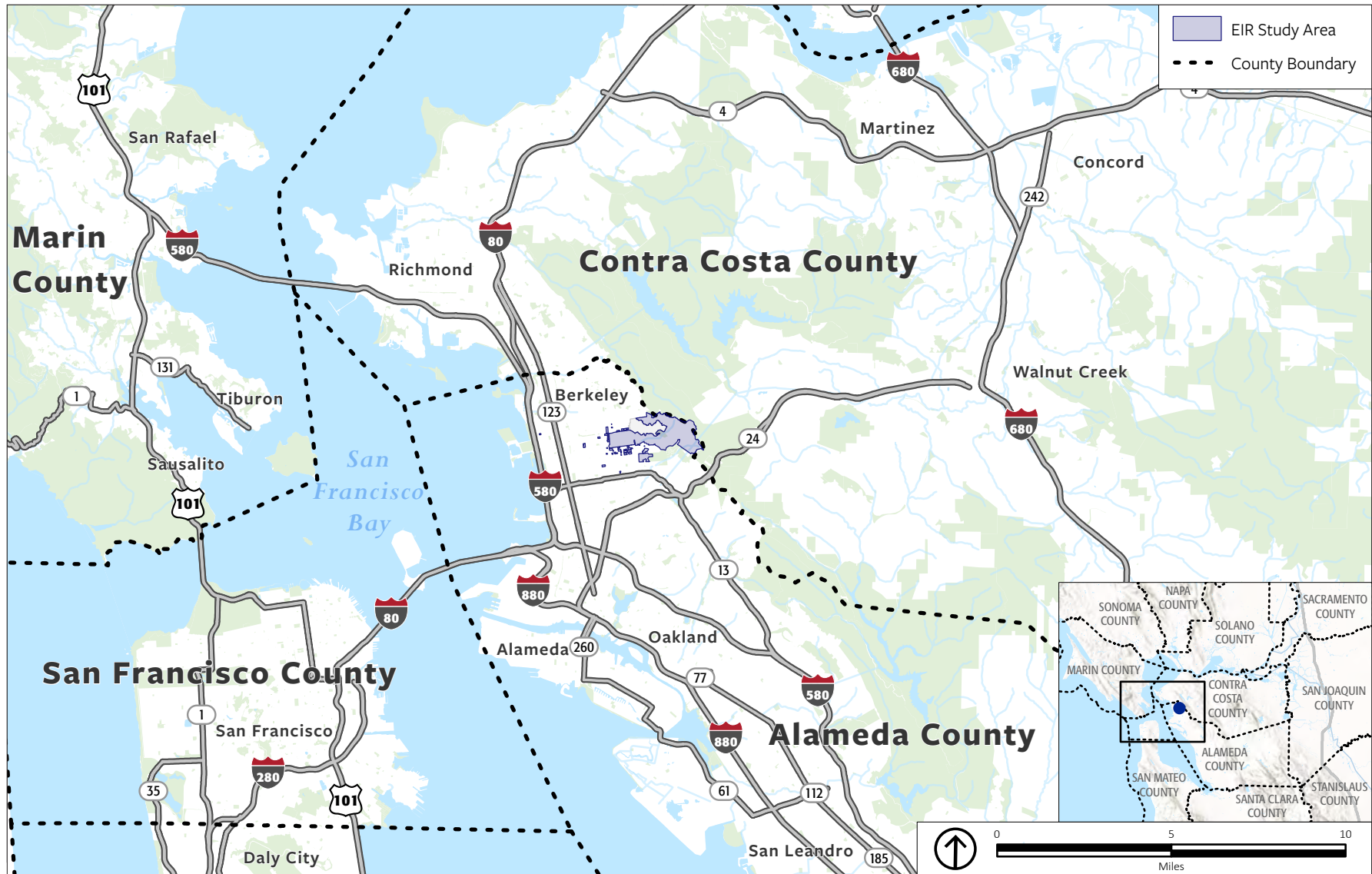
3.3 REGIONAL CONTEXT

3.3.1 LOCATION

The UC Berkeley campus is located in the East Bay of the San Francisco Bay area. UC Berkeley is in an urbanized area, surrounded by a mix of largely residential, institutional, and commercial land uses to the north, west, and south, and open space in the East Bay hills to the east. UC Berkeley is predominantly located within the cities of Berkeley and Oakland. It is situated on the eastern side of Berkeley near Downtown Berkeley and extends east into the Oakland hills. The UC Berkeley campus is located almost entirely within Alameda County, with a small portion to the east extending into Contra Costa County. Major regional roadways serving the UC Berkeley campus include Interstate 580, 1.7 miles west of UC Berkeley's main campus (referred to as the "Campus Park"); State Route 13, 0.3 miles south of the Campus Park; and State Route 24, 1.0 mile south of the Campus Park. Main local roadways leading to UC Berkeley include University Avenue running east to west from the Campus Park to Interstate 580, Shattuck Avenue running south of University Avenue near the Campus Park, and Telegraph Avenue running south of the Campus Park from Bancroft Way. Figure 3-1, Regional and Vicinity Map, provides a regional location map.

3.3.2 REGULATORY SETTING

The University of California, including UC Berkeley, is a constitutionally created State educational institution with "full powers of organization and government" (California Constitution Article IX, Section 9). As such, the UC is not subject to regulations of local governments, such as city and county general plans and land use and zoning policies, when using property under the UC's control in furtherance of the UC's educational purposes.



Source: Alameda County, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Figure 3-1
Regional Location Map

For coordination purposes, UC Berkeley may consider aspects of local plans and policies for the communities surrounding the UC Berkeley properties when it is appropriate and feasible, although there is no formal mechanism for doing so. However, UC Berkeley is not bound by those plans and policies. Local and regional agencies with plans and policies that could affect the proposed project include the cities of Berkeley and Oakland, Alameda and Contra Costa counties, the Bay Area Air Quality Management District, San Francisco Bay Regional Water Quality Control Board (RWQCB), East Bay Municipal Utility District (EBMUD), and the Alameda County Transportation Commission. Potentially applicable regulations are provided in greater detail in Chapters 5.1 through 5.18.

3.4 EIR STUDY AREA

The EIR Study Area or “project site” is contiguous with the proposed LRDP Update Planning Area and includes the majority of UC Berkeley–owned properties. UC Berkeley–owned properties outside of the EIR Study Area include the University Village in the city of Albany, the Richmond Field Station in the city of Richmond, and various properties lying entirely outside the city of Berkeley, including numerous research reserves, field stations, and experimental forests throughout California. These areas are outside of the scope of the proposed LRDP Update because they are sufficiently distant from the Campus Park and its environs and, therefore, they are not evaluated in this EIR. The EIR Study Area is organized into the five zones described herein and shown on Figure 3-2, EIR Study Area. These zones are collectively referred to as the UC Berkeley campus.

- **Campus Park.** The Campus Park is the main part of the campus and is bounded by Hearst Avenue to the north, Gayley Road/Piedmont Avenue to the east, Bancroft Way to the south, and Oxford Street/Fulton Street to the west. It covers an area of approximately 180 acres, comprising 16 percent of the UC Berkeley campus land area. The majority of UC Berkeley facilities are located on the Campus Park, including most academic life, administrative, and student life facilities. Numerous buildings are listed on the California Register of Historical Resources and/or the National Register of Historic Places (NRHP).
- **Hill Campus West.** The Hill Campus West is located on the eastern side of the Campus Park at the base of the East Bay hills. It covers an area of approximately 50 acres, comprising 5 percent of the UC Berkeley campus land area. It includes facilities like the California Memorial Stadium, Witter Rugby Field, Softball Field, Haas Clubhouse, Maxwell Family Field and Stadium Garage, and Hearst Greek Theatre as well as student housing.
- **Hill Campus East.** The Hill Campus East extends east from the Hill Campus West into the East Bay hills and includes land within the city of Oakland boundaries as well as a small portion extending into Contra Costa County. The Hill Campus East consists primarily of open space. It covers an area of approximately 751 acres, comprising 69 percent of the UC Berkeley campus land area. It also contains unpaved fire roads⁴ and several research facilities, including Lawrence Hall of Science, Space Sciences Laboratory, Mathematical Sciences Research Institute, Field Station for the Study of Behavior, Ecology and Reproduction, and the UC Berkeley Botanical Garden.

⁴ These fire roads are unpaved roads that provide access for maintenance and firefighting equipment.

3. PROJECT DESCRIPTION

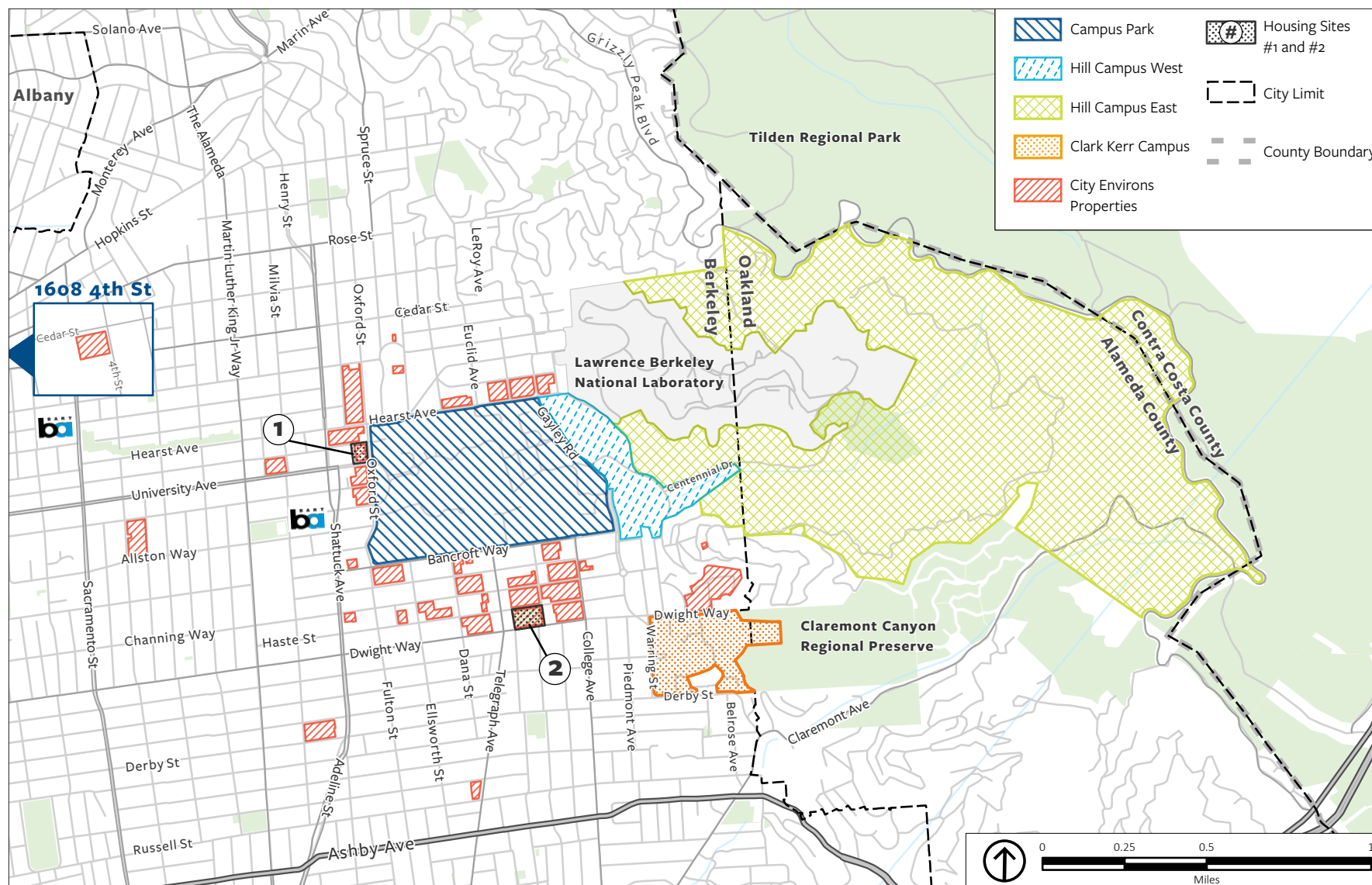


Figure 3-2
EIR Study Area

- **Clark Kerr Campus.** The Clark Kerr Campus is located several blocks southeast of the Campus Park. It covers an area of 44 acres, comprising 4 percent of the UC Berkeley campus land area. Clark Kerr Campus is generally bounded by Dwight Way to the north, Claremont Canyon Regional Preserve to the east, Derby Street to the south, and Warring Street to the west. Formerly the California School for the Deaf and Blind, the Clark Kerr Campus includes student housing and amenities, conference space including the Krutch Theater, and childcare and development centers. The entirety of this campus is listed on the NRHP as District No. 82000962 State Asylum for the Deaf, Dumb, and Blind. In 1982, UC Berkeley executed a Declaration of Covenants and Restrictions with neighboring property owners encumbering the Clark Kerr Campus and a Memorandum of Understanding with the City of Berkeley (“CKC Covenants”), which generally limit significant changes in either the use or physical character of the Clark Kerr Campus through the year 2032, absent a change in circumstances.
- **City Environs Properties.** The City Environs Properties refers to properties owned or leased by UC Berkeley that are outside of the areas described previously and located within the city of Berkeley. The properties owned by UC Berkeley in the City Environs Properties comprise approximately 70 acres or 6 percent of the UC Berkeley campus land area. The proposed Housing Projects #1 and #2 sites are in the City Environs Properties. UC Berkeley properties in the City Environs Properties are mostly located in the high-density area within roughly one-half mile of the Campus Park.

3.5 COMPONENTS OF THE PROPOSED PROJECT

3.5.1 LONG RANGE DEVELOPMENT PLAN UPDATE

The proposed LRDP Update was published as a draft document for public review concurrently with this Draft EIR and is available on the project website at <https://lrpd.berkeley.edu/>. This section describes the contents of the proposed LRDP Update and the potential development program.

3.5.1.1 ORGANIZATION OF THE LONG RANGE DEVELOPMENT PLAN UPDATE

The proposed LRDP Update is an overarching plan to guide long-term development of the entire LRDP Planning Area. The proposed LRDP Update contains the following chapters:

- **Chapter 1, Introduction and LRDP Context:** This chapter introduces the proposed LRDP Update, describes the relationship of the proposed LRDP Update to the EIR and other key UC Berkeley plans and documents, and establishes the overall context for the proposed LRDP Update. Specific topics addressed include Background and Purpose, Environmental Impact Report, Related Plans, Scope, Planning Areas, and Planning Process.
- **Chapter 2, LRDP Framework:** This chapter describes the foundation for the proposed LRDP Update, including key drivers and goals. It identifies the proposed LRDP Update planning population, including the number of students, faculty and staff, and the development program. Chapter 2 topics include Strategic Plan Background, LRDP Principles and Goals, UC Berkeley Population, and Development Program.
- **Chapter 3, LRDP Elements:** This chapter contains additional objectives in specific topical areas, following from the proposed LRDP Update principles and goals in Chapter 2. The topical areas include land use, landscape and open space, mobility systems, and infrastructure, resilience, and life safety. Land

use is conveyed via a land use map that describes five major land use zones, including the Campus Park, the Hill Campus West, the Hill Campus East, the Clark Kerr Campus, and the City Environs Properties.

- **Chapter 4, Community Partnerships:** This chapter addresses areas of shared interests and goals between UC Berkeley and the community, including a description of existing partnerships as well as objectives to further foster partnership opportunities.
- **Chapter 5, Implementation:** This chapter provides an overview of how the proposed LRDP Update and future individual projects would be implemented over time, including the UC Berkeley process for coordinating capital project review and approval, which may be modified in the future.

3.5.1.2 GOALS AND PRINCIPLES

The proposed LRDP Update is guided by five principles that reflect the values that would inform future decision-making during implementation of the proposed LRDP Update. Each principle is listed herein along with the series of goals that define the desired end-state of the proposed LRDP Update.

Principle 1: Foster a vibrant and inclusive campus experience for all.

- Goal 1.1: Provide accessible and inclusive indoor and outdoor campus life spaces to create a shared sense of community, interaction, and wellness.
- Goal 1.2: Improve the existing housing stock and construct new student beds and faculty housing units in support of the Chancellor's Housing Initiative.
- Goal 1.3: Enhance the connectivity between UC Berkeley and surrounding areas, through continued collaboration and partnership in areas of shared interest related to capital investment.
- Goal 1.4: Maintain and enhance the image and experience of the physical campus, and support the continuing evolution of the UC Berkeley campus's notable and historic landscapes and architecture.

Principle 2: Promote discovery, innovation, and interdisciplinary collaboration.

- Goal 2.1: Provide adaptable, flexible academic and research space to meet UC Berkeley's physical space needs in support of UC Berkeley's mission and Strategic Plan.
- Goal 2.2: Site academic and research facilities to foster interdisciplinary collaboration and provide indoor and outdoor places for interaction.
- Goal 2.3: Maintain the Hill Campus East as a resource for research, education, and energy resilience and focus potential development on suitable sites, while managing and reducing wildfire risk.

Principle 3: Improve campus wayfinding and connectivity.

- Goal 3.1: Take advantage of UC Berkeley's urban location to prioritize multi-modal and integrated mobility system improvements that promote efficient, sustainable, and safe campus access.
- Goal 3.2: Promote sustainable transportation modes to decrease carbon emissions, congestion, and parking demand.
- Goal 3.3: Minimize private vehicle access within the Campus Park and the Clark Kerr Campus.
- Goal 3.4: Prioritize improvements and create clearly defined routes for bicycle, pedestrian, transit, and micro-mobility networks to enhance campus connectivity and safety.

- Goal 3.5: Enhance wayfinding, using principles of universal design to make navigation more intuitive and inclusive, and to ensure equitable access to the physical campus by all members of the campus community.

Principle 4: Enhance the sustainability and resilience of the UC Berkeley Campus.

- Goal 4.1: Adapt campus landscapes to improve environmental health, enhance ecology and biodiversity, and create educational and research opportunities.
- Goal 4.2: Upgrade and modernize buildings and infrastructure to address deferred maintenance and support new development. Meet and strive to exceed UC system and UC Berkeley policies and goals for sustainability, resilience, and seismic safety.
- Goal 4.3: Implement strategies that enhance campus resilience, to protect human health and safety, maintain essential infrastructure services and operational continuity, preserve investment in the physical campus, and cultivate adaptable natural systems..

Principle 5: Optimize campus resources.

- Goal 5.1: Ensure the highest and best use of campus land to serve UC Berkeley’s mission.
- Goal 5.2: Plan every new project – including renovations, additions, and new construction – to support optimal investment of resources, meet space needs, address deferred maintenance, and reduce seismic risk.
- Goal 5.3: Balance new investments with the renewal of existing facilities to ensure that all campus spaces are functional and well maintained, and to improve space utilization and efficiency in existing facilities to meet program needs.
- Goal 5.4: Design spaces to meet immediate needs and functionality, while incorporating adaptable and multi-purpose spaces to provide future flexibility.

3.5.1.3 LAND USE ELEMENT

UC Berkeley’s campus uses are organized by residential, academic life, campus life, parking, and open space. The proposed LRDP Update’s building and land use strategy provides guidance around the location and types of potential future development across the UC Berkeley campus for these uses, which are described herein. Additional details about the potential areas of new development, redevelopment, and renovation are described in Section 3.5.1.7, Development Program.

- **Residential.** Residential space includes residence halls, suites, and apartments for students (undergraduate, graduate, and family), staff, and faculty. Housing for students and faculty exists within the Hill Campus West, the Clark Kerr Campus, and the City Environs Properties. Most residential facilities are located south of Bancroft Way in the City Environs Properties south of the Campus Park, and in the Foothill site in the Hill Campus West. Residential facilities are not located on the Campus Park. Fraternities and sororities, or Greek letter social organizations, and co-op housing facilities are located primarily south of the Campus Park, but some are on the north side; however, the majority of these properties are privately operated, and while several are located on UC land, none are considered UC Berkeley housing. The proposed LRDP Update’s housing strategy is designed to meet and extend

the goals and needs identified within the Chancellor’s Housing Initiative,⁵ which identified needs for the then current UC Berkeley population at the time of the study (2017). UC Berkeley has identified potential areas of new development and redevelopment that could accommodate additional housing on the Clark Kerr Campus and the City Environs Properties. Improvements to housing facilities includes modernization of existing facilities; redevelopment or renovation of existing buildings or underutilized sites; as well as renovation or redevelopment of existing facilities to address significant seismic and deferred maintenance needs. This EIR provides a project-level analysis (i.e., evaluates potential impacts from construction and operation) of two of these potential areas of new development, which are the Helen Diller Anchor House site (Housing Project #1) and People’s Park site (Housing Project #2). Project components of these two housing projects are discussed in Section 3.5.2 and Section 3.5.3 of this chapter. Other properties could be developed for housing, including, but not exclusively, those identified in the Chancellor’s Housing Initiative.

- **Academic Life.** Academic life spaces include classrooms, teaching labs, research space, academic and administrative offices, conference space, study space, open labs, library stack and processing space, utilities, infrastructure, and other miscellaneous uses. The highest priority needs for academic life space are classrooms and study space, followed by research space. Academic life spaces are primarily located within the Campus Park, but also include facilities located in the Hill Campus West, the Hill Campus East, Clark Kerr Campus, and the City Environs Properties. Under the proposed LRDP Update, academic, research, support space, and programs that directly engage students and promote student-faculty interaction would continue to be prioritized for the Campus Park. However, it is not possible to accommodate all projected future academic life demands on the Campus Park alone. Specific program locations would be prioritized based on the need for proximity to the Campus Park. Improvements to academic life facilities include modernization of existing facilities, redevelopment or renovation of underutilized sites and sites with significant seismic and deferred maintenance needs, and new development to meet current and future academic needs.
- **Campus Life.** Campus life consists of campus-related activities and facilities outside of academia. These include Intercollegiate Athletics, recreation, and wellness; assembly and exhibition facilities; dining facilities; retail facilities, and social spaces. Campus life facilities exist within all zones. The proposed LRDP Update includes additional campus life space needs as identified in the development program. Social space is needed overall, both indoors and outdoors. Recreation and wellness program needs include expanded fitness, gym, and wellness facilities as well as outdoor field space. Space needs for Intercollegiate Athletics include a new basketball practice and gymnastics facility for the National Collegiate Athletic Association Division 1 programs, a new beach volleyball facility at Clark Kerr Campus, and a student athlete hub to support sports with facilities in the western area of the Campus Park. The proposed LRDP Update addresses the need for the preservation, enhancement, and/or replacement and, if required, addition of recreation and athletic field space for students, student-athletes, and spectators.
- **Parking.** Parking facilities are distributed throughout the UC Berkeley campus and include a variety of structured, surface, and on-street parking options. The proposed LRDP Update recognizes that the parking network is one aspect of an overall mobility strategy that considers the interconnected modes of movement to/from and within the UC Berkeley campus with the goal of minimizing vehicles on the Campus Park, reducing greenhouse gas emissions, and accommodating the identified parking need.

⁵ University of California, Berkeley Office of the Chancellor, 2020. *Housing Initiative*. <https://chancellor.berkeley.edu/housing-initiative>, accessed August 14, 2020.

Some existing parking spaces would be displaced as part of the proposed LRDP Update due to accommodation of new development and transportation network modifications. Potential underground and/or aboveground parking garage spaces could be dispersed throughout the UC Berkeley campus. See Section 3.5.1.5, Mobility Systems Element, for additional details.

- **Open Space.** The Campus Park is an extraordinary natural and visual resource that provides a counterpoint to its urbanized environs. It contains a unique synergy of natural, organic forms with Strawberry Creek and its sloping terrain that are an integral part of the UC Berkeley campus, and although intensively developed, the Campus Park retains a distinctive parklike environment of natural and formal open spaces. In addition, there is a variety of open space areas located throughout the Campus Park in the form of natural and green spaces such as rooftop gardens, glades, lawns, and the riparian area⁶ along Strawberry Creek. These open spaces provide passive outdoor recreation and scenic resources; they also contribute to reduction of greenhouse gas emissions and support of habitat, biodiversity, and resilience. As the topography rises from the Campus Park to the east, the area is generally undeveloped and contains dense vegetation and woodlands. The Hill Campus East comprises the majority of UC Berkeley's open space and includes research facilities and fire roads managed for maintenance and emergency vehicle access and as evacuation routes that are also used by the public. The proposed LRDP Update envisions that this zone would remain as open space, would continue to be managed for climate resilience, and could provide opportunities for academic life space and the installation of renewable energy systems. In addition, various open space areas are located throughout the Campus Park in the form of natural and green spaces such as rooftop gardens, glades, lawns, and the riparian area along Strawberry Creek. See Section 3.5.1.4, Landscape and Open Space Element, for additional details.

3.5.1.4 LANDSCAPE AND OPEN SPACE ELEMENT

The overall landscape and open space strategy in the proposed LRDP Update includes providing opportunities to enhance campus wayfinding and connectivity, to cultivate a diverse and beautiful campus setting, and enhance the sustainability and resilience of the UC Berkeley campus. The Hill Campus East would remain largely as open space, would continue to be managed for climate resilience and to reduce wildfire risk, and in the future could provide opportunities for academic life associated with the existing academic and research functions in the Hill Campus East and the installation of renewable energy systems such as solar array/photovoltaic (PV) power station.

The following describes the landscape and open space areas on the UC Berkeley campus and describes the potential opportunities for enhancement and improvement, including potential initiatives within the Campus Park:

- **Natural Areas.** Natural areas consist of the extensive natural open space associated with the slopes and canyons that characterize the Hill Campus East and the Hill Campus West landscape. Natural areas would continue to be preserved for ecological, research, resiliency and climate change, and recreation purposes.
- **Strawberry Creek and Wooded Areas.** The Strawberry Creek riparian corridor consists of headwaters of the creek in the Hill Campus East and the north and south forks of the creek through the Campus

⁶ A riparian zone or riparian area is the interface between land and a river or stream.

Park. It also includes adjacent wooded areas, such as the Eucalyptus Grove, Wickson Natural Area, and Observatory Hill. Landscape and open space areas within the corridor would be preserved and enhanced where possible to support the health and ecology of the Strawberry Creek riparian system and provide places for relaxation, contemplation, and recreation. A potential initiative of the proposed LRDP Update includes daylighting and restoration of portion(s) of Strawberry Creek, including the West Oval in the north fork and Wheeler Glade in the south fork. Improvements could also include enhancement of natural areas for gathering and ecological improvement along Strawberry Creek at locations such as Wheeler Glade, the Old Art Gallery, the West Oval, and Grinnell Natural Area.

- **Glades.** Glades are unique to the Campus Park and consist of open expanses of lawn defined by natural perimeters of trees and an organic form with gently rolling topography. Existing glades include the Memorial Glade, Central Glade, Faculty Glade, and, described above, Wheeler Glade. The glades would be preserved and enhanced as key unifying elements of the UC Berkeley campus landscape that complement the Strawberry Creek corridor while providing places for passive recreation and informal and ceremonial gatherings. A potential initiative of the proposed LRDP Update includes re-establishment of the original John Galen Howard vision of the historic Central Glade as a central campus green space by removing Evans Hall and replacing it with a low building nested into the sloping topography with publicly accessible landscaping on top and to the west, and by the renewal of the West Crescent landscape. Improvement and expansion of smaller-scale glades and open spaces throughout each of the UC Berkeley campus zones are also envisioned.
- **Major Open Spaces.** Major open spaces are informal gathering spaces that do not have a naturalistic character or function. They are intended to provide relief within the built environment, and also to provide places for social interaction, community building, relaxation, contemplation, and recreation. Several new major open spaces could be introduced in the landscape and open space framework along key circulation routes in areas of the UC Berkeley campus to support interaction and facilitate navigation through the campus. Potential improvements to the UC Berkeley campus's open space network could include new open spaces at the Law School Lot, Evans Hall site, Hearst Field Annex, Clark Kerr Campus, and new residential developments; and improvement of existing open spaces at the West Crescent, CNR Quad, College Avenue Quad, and Arts Quad.
- **Active Open Spaces.** Active open spaces comprise the UC Berkeley's existing sports fields, which would continue to be used for Intercollegiate Athletics, recreation, and physical education programs. A potential initiative of the proposed LRDP Update includes the creation of a new recreation field on the site of the existing Hearst Field Annex.
- **Hardscape and Plazas.** Hardscapes and plazas consist of architectural and social spaces as well as major circulation routes on the UC Berkeley campus. They facilitate navigation through the Campus Park and the Clark Kerr Campus and support informal interaction among UC Berkeley's intellectual community. Some of the key hardscape area and plazas currently include the Campanile Way and Sather Road esplanades and other major circulation routes, and large gathering areas such as Upper and Lower Sproul Plazas. A potential initiative of the proposed LRDP Update includes the creation of shaded pedestrian connections along primary and secondary routes to assist with wayfinding, pedestrian comfort, and overall campus legibility.
- **Urban Landscapes.** Landscape and open space elements of the City Environs Properties would continue to support UC Berkeley uses on those sites.

3.5.1.5 MOBILITY SYSTEMS ELEMENT

The overall mobility strategy seeks to create an integrated, connected, and coordinated system of multimodal networks that collectively work to prioritize the pedestrian experience within the Campus Park; provide comprehensive means of access to, from, and within the UC Berkeley campus; and reinforce wayfinding. The proposed LRDP Update includes the following potential initiatives, which are further explained in the sections that follow.

- Enhancement of existing pathways to strengthen the UC Berkeley campus's pedestrian network, including improvements of primary and secondary north-south and east-west connections, integrated with land use, landscape, and infrastructure, and overall accessibility improvements.
- Enhancement of existing bicycle routes to strengthen the UC Berkeley campus's bicycle network, with integration into the broader City of Berkeley bicycle network.
- Removal of surface parking (parking lots and on-street parking) for permitted and department reserved spaces and increased restrictions on public vehicular access throughout the Campus Park, with provision of structured parking consolidated at the periphery of or near the Campus Park. Service/loading and parking compliant with the Americans with Disabilities Act (ADA), and referred to here as accessible parking, would largely remain or be relocated to maintain appropriate access to UC Berkeley buildings.
- Development of several mobility hubs throughout the Campus Park, Clark Kerr Campus, and City Environs Properties that would bundle mobility services to provide more comprehensive connectivity to and around the UC Berkeley campus.
- Repositioning of University Drive as a shared route prioritizing pedestrians, bicycles, and transit, with limited vehicular access.
- Improvement or addition of accessible crossings over Strawberry Creek, such as at Wheeler Glade, Faculty Glade, and Bayard Rustin Way.
- Maintaining the parking supply for commuting faculty, staff, and students at the same or lower ratio as the current parking supply to the commuting population.

Transportation demand management, commonly referred to as TDM, is a defined set of strategies aimed at maximizing travelers' choices.⁷ TDM comprises a wide variety of measures, from improving pedestrian and bicycle accessibility and safety to price subsidies and pre-tax purchase of transit tickets. The proposed LRDP Update would continue to improve upon existing UC Berkeley TDM strategies to reduce drive-alone mode shares. This would involve improvements to pedestrian and bicycle circulation, the edges of Campus Park, transit services, mobility hubs with accommodations for micromobility vehicles (e.g., bicycles, scooters), and automobile circulation and parking around the UC Berkeley campus to increase the efficiency, safety, availability of transportation options for students, staff, faculty, and visitors. In addition to the improvements listed below, UC Berkeley is exploring incentives and programs to reduce the number of faculty, staff, and students that drive alone to campus. These incentives and measures may include discounts and subsidies for use of local transit services such as AC Transit, BART, and bicycle/scooter share

⁷ United States Department of Transportation, 2020. Transportation Demand Management. https://ops.fhwa.dot.gov/plan4ops/trans_demand.htm, accessed October 3, 2020.

services; changes to parking policies; and expansion of telecommuting programs. Potential improvements to the pedestrian and bicycle circulation, campus edge, transit shuttles, and mobility hubs that maximize travelers' choices are described here.

- **Pedestrian Circulation.** Pedestrian access is provided throughout the majority of the UC Berkeley campus. The proposed LRDP Update would include an updated pedestrian network on the Campus Park and the Clark Kerr Campus to improve safety and circulation. The pedestrian circulation framework would improve pedestrian movement throughout the Campus Park and the Clark Kerr Campus by delineating a comprehensive network of primary and secondary north-south and east-west corridors and other, tertiary paths based on user desire lines. It would also strengthen gateways where primary and secondary routes connect with surrounding city streets.
- **Bicycle Circulation.** Bicycle access is allowed throughout the majority of the Campus Park. The proposed LRDP Update would include an updated bicycle network on the Campus Park and the Clark Kerr Campus to improve safety and circulation. The bicycle circulation framework defines an improved system of bicycle routes, which would be expanded within the Campus Park and further integrated with the City of Berkeley bicycle network. The framework includes two primary north-south routes and one primary east-west route as well as enhanced secondary and tertiary bicycle routes to facilitate connections through all areas of the Campus Park. Bicycle circulation routes are located to connect directly with the surrounding City of Berkeley bicycle network. The existing bicycle dismount zone through Sproul Plaza on the southern edge of the campus would be preserved. Specific updates to the bicycle network in the Campus Park could include:
 - The addition of cycletracks adjacent to pedestrian paths to follow major thoroughfares across campus while separating pedestrians and bicycles.
 - High-visibility sharrows to designate bicycle paths and provide direction.
 - A shuttle roadway with adjacent bicycle lane and sharrows along University Drive.
 - Sharrows with bicycle tracks on stairs.
 - Redesigned vehicle access at the East and West Gates.

Bicycle racks and secure bicycle parking are located throughout the Campus Park. Multiple bicycle-share stations and additional bicycle racks and secure bicycle parking facilities are located in the blocks surrounding the Campus Park, owned and maintained by the City of Berkeley or by private entities.

- **Campus Park Edge Improvements.** Improvements to pedestrian and bicycles facilities would be made around the edges of the Campus Park with the goal of prioritizing pedestrian and bicycle access and limiting vehicle access, particularly at the West Crescent, Hearst Avenue at Arch Street, North Gate, University Drive at Gayley Road, Optometry Lane at Gayley Road, Bancroft Way at Barrow Lane, Bancroft Way at Ellsworth Street, and Oxford Street at Frank Schlessinger Way. These could include widened sidewalks and improved accessibility along all campus edges; a new pedestrian connection into campus at Ellsworth Street; improved curb management such as reduced parking and added passenger loading zones, transit stops, and bicycle/pedestrian facilities along Oxford Street between Hearst Avenue and Bancroft Way and along portions of Bancroft Way and Hearst Avenue; and redesigned sidewalks to remove a pinch point for bicyclists near the intersection of Oxford Street and Center Street. Improvements to the Campus Park gateways would include gates and other improvements at several access points near the Campus Park edge to restrict most private vehicle access to the Campus Park interior, prioritizing pedestrian and bicycle access and safety. Improvements to the bicycle circulation routes would be located to better connect directly with the surrounding City of Berkeley bicycle network.

3. PROJECT DESCRIPTION

- **Transit Service.** The transit service framework supports existing and enhanced transit and shuttle service throughout the Campus Park and to the Clark Kerr Campus as well as key destinations in the Hill Campus East, the Hill Campus West, and the City Environs Properties. UC Berkeley’s BearTransit system offers shuttle service around the UC Berkeley campus. Existing transit routes for students include:
 - BearTransit Perimeter Line (P Line) that provides clockwise service around the Campus Park.
 - C Line focused on the northern half of the Campus Park.
 - Hill Line (H Line) that provides service between the eastern side of the Campus Park, Hill Campus West, and Hill Campus East
 - Reverse Perimeter Line (R Line) that provides counterclockwise service around the Campus Park, Southside, and the Clark Kerr Campus.

Based on future demand, UC Berkeley could consider adding a new route to better connect BART to the Campus Park with more frequent service. Service routes would align with and connect to BART and AC Transit service.

- **Mobility Hubs.** The proposed LRDP Update would add several places, both indoor and outdoor, where multiple transportation options are consolidated (e.g., bus and Loop⁸ stops, bicycle and scooter shares, Transportation Network Company [TNC]⁹ loading, etc.), referred to as “mobility hubs,” around the Campus Park, the Clark Kerr Campus, and the City Environs Properties. Mobility hubs that are either located within or outside of buildings, are intended to alleviate the obstacle referred to as the “last mile”¹⁰ by providing co-located multimodal options for a range of trip types to improve the travel experience for all UC Berkeley populations. Mobility hubs are under consideration for University Hall, North Gate, RSF, Lower Sproul, College Avenue at Bancroft Way, Channing-Ellsworth, Underhill Garage, Haas School of Business, the Clark Kerr Campus, Oxford Tract, and within the Campus Park interior at Moffitt Library, Hearst Mining Circle, and Dwinelle Hall.
- **Vehicular Circulation and Parking.** A key goal of the proposed LRDP Update is to minimize private vehicular access and movement, as well as parking for cars and trucks within the Campus Park and to prioritize improvements to nonmotorized mobility systems, as described in the previous items. The vehicular circulation framework focuses on minimizing the movement of private vehicles into and within the Campus Park, and limiting vehicular traffic to the periphery of the Campus Park. Vehicular traffic would be directed to primary public access points from Oxford Street and Gayley Road. Entry gates would control access to the UC Berkeley campus for service vehicles, transit, and access to accessible parking.

The proposed mobility strategy recommends the select relocation of several surface parking lots within the Campus Park while preserving accessible parking, and replacing lost parking capacity in parking structures on the periphery of the Campus Park or on sites within the City Environs Properties. See Section 3.5.1.7, Development Program, for further discussion on parking removal.

⁸ The Loop is a golf cart that provides intracampus rides for eligible faculty, staff, and students with disabilities on a first-come, first-served basis. This service was created to assist persons with mobility disabilities (including temporary disability as a result of injury) and visual impairments. The Loop only operates on the Campus Park.

⁹ Transportation Network Company or TNC is a term used to refer to rideshare companies such as Uber and Lyft.

¹⁰ The last mile obstacle, also referred to as the first-mile last-mile, is term used to describe getting to and from a transit stop and the user’s destination when the transit stop and end destination are not conveniently close to one another.

The mobility strategy also includes maintaining existing mobility infrastructure, such as repaving roadways, bridge repairs, and other similar maintenance activities. The ongoing maintenance of mobility infrastructure would be conducted as part of UC Berkeley's routine maintenance and Capital Renewal Program that together, address deficiencies in UC Berkeley facilities.

3.5.1.6 INFRASTRUCTURE, RESILIENCE, AND EMERGENCY SYSTEMS ELEMENT

Infrastructure improvements would be needed to upgrade existing aging infrastructure as well as ensure that utilities can adequately support environmental and climate changes, and buildout and population projections. Upgrading existing utility, water, and energy systems represents a major opportunity for improved stewardship of natural resources as well as enhanced resilience. Many existing systems result in significant energy use because of inefficient infrastructure, and the possibility of replacing these existing systems with renewable and resilient energy systems provides additional opportunities for conservation, carbon emissions reductions, and improved resilience and efficiency. UC Berkeley is considering opportunities to supplement the UC Berkeley campus's electrical resilience to provide renewable technologies and a more abundant, renewable, and reliable energy source during Pacific Gas and Electric Company's (PG&E) Public Safety Power Shutoff (PSPS) and other service interruptions.

Potable and Fire Water

Infrastructure improvements to water supply for UC Berkeley's properties would include updating the pipeline infrastructure that could cause leaks, system disruptions, flooding, or unintentional runoff into nearby creeks where needed. The 2015 Campus Infrastructure Master Plan¹¹ recommended a renewal and replacement plan focused on replacing the oldest cast-iron and cement-lined steel pipes as well as pipes that can be upgraded during planned new construction or renovations. UC Berkeley's current baseline water use goals include reducing potable water use through water efficiency infrastructure and education. UC Berkeley's Campus Sustainability Plan additionally promotes an increase in the use of nonpotable water on campus to reduce potable water usage. UC Berkeley is considering the development of a wastewater treatment facility on the Campus Park to produce nonpotable water to serve demands, including toilet flushing, irrigation, and mechanical systems. UC Berkeley is also exploring the potential for exporting nonpotable water off-site to offset on-campus water use and move toward a zero-water waste future.

Sanitary Sewer

Sanitary sewer infrastructure upgrades would replace old and aging pipes vulnerable to root intrusion and infiltration and inflow, with the prioritization of older cast iron pipes. This would require evaluation of all gravity mains on campus; cleaning and inspection of all sanitary sewer pipes; a current condition assessment of all sanitary sewer laterals for properties owned and maintained by UC Berkeley, which UC Berkeley aspires to complete by the year 2025; and rehabilitation of any sanitary sewer laterals with deficiencies, such as leaks, tree root interference, structural defects, or inflow/infiltration issues, which UC

¹¹ West Yost and Associates, November 2015. *UC Berkeley Campus Infrastructure Master Plan and Renewal Investment Strategy*, Final Report.

3. PROJECT DESCRIPTION

Berkeley aspires to complete by 2035. One such upgrade is the upsizing of the existing sewer line that runs beneath Centennial Drive in the Hill Campus West and the Hill Campus East. Systems to intercept, treat, and reuse wastewater on the UC Berkeley campus for nonpotable water demands could be installed, which would reduce discharges to the EBMUD sanitary sewer system.

Stormwater Management

Improvements identified for the UC Berkeley campus storm drain conveyance system would include replacing or upsizing existing storm drains to manage flooding risk. Current UC Berkeley stormwater management regulations require installation of stormwater best management practices in conformance with State Water Resources Control Board requirements for all new projects to reduce runoff and provide water quality treatment prior to discharge to creeks. The current UC Berkeley Campus Design Standards require all projects to generate no net new stormwater runoff. During the life of the proposed LRDP Update, in partnership with RWQCB, UC Berkeley seeks to implement a program of stormwater improvements based on a holistic, campuswide credit system that would allow major high-impact improvements to be implemented rather than smaller, lower-impact projects on an incremental building project basis. Continued implementation of decentralized green infrastructure that provides key stormwater functions, including water quality management, retention, and peak-flow mitigation, would be essential to preserving and enhancing Strawberry Creek, meeting stormwater management requirements, and improving campus resilience. In conjunction, UC Berkeley plans to incorporate restoration projects along Strawberry Creek to improve conveyance, reduce erosion, and improve habitat and to integrate larger centralized stormwater features into key landscape improvement projects. Two such projects under consideration are the restoration of Strawberry Creek at the West Oval Glade and at Wheeler Glade, which could include riparian vegetation restoration, expansion of the flood plain, and stormwater treatment integrated along the edge of the glades.

To reduce the piecemeal approach of small stormwater treatment facilities scattered throughout the UC Berkeley campus, UC Berkeley would implement centralized stormwater management facilities designed to manage stormwater from larger upstream watersheds that would exceed the requirements of a specific development project and maintain the UC Berkeley's commitment to no net new increase of stormwater flow from new development projects. These centralized facilities would provide "stormwater credits" for development projects that are constrained in implementing on-site stormwater facilities due to space limitations or slope. In addition, this would provide environmental benefits, such as improved flood and drought resilience, landscape integration, living laboratory opportunities for students and staff, and enhanced mobility corridors. One option is to track stormwater credit collectively for all UC Berkeley properties within Strawberry Creek and Potter/Derby watersheds, including the Campus Park, the Clark Kerr Campus, and UC Berkeley-controlled parcels in the city of Berkeley.

Energy

UC Berkeley campus energy infrastructure consists of several interconnected systems: electricity and natural gas provided by PG&E, and power to some sites provided by East Bay Community Energy and the University of California wholesale power program; on-site PV arrays; in-building chillers; a cogeneration plant on the Campus Park to produce steam and electricity that is powered by natural gas; and a steam plant on the Clark Kerr Campus.

UC Berkeley prepared a comprehensive Energy Use Policy,¹² in which it would manage its operations so that energy and carbon is used in the most sustainable manner possible while providing a safe and comfortable environment for teaching, research, and public service. The Energy Use Policy would affect UC Berkeley students, faculty, and staff as well as external consultants and contractors. The Energy Use Policy would provide a UC Berkeley-specific framework to support energy and carbon-efficient decisions in accordance with the University of California Sustainable Practices Policy, the proposed LRDP Update, the UC Berkeley 2009 Climate Action Plan, and other UC Berkeley plans. The Energy Use Policy outlines energy requirements and guidelines for:

- Existing Building Operations
- New Construction
- Large, Medium, and Small Renovations
- Clean Energy Supply
- Supply Chain Management and Information Technology
- Laboratories

Implementation of the Energy Use Policy requires cross-department collaboration and communication to help achieve the most energy-efficient campus possible. The Energy Use Policy aligns with previously adopted UC Berkeley environmental and sustainability goals, workplace safety and accommodation policies, and Campus Design Standards.

Other UC Berkeley goals that are related to energy use and conservation include obtaining Leadership in Environmental and Energy Design (LEED) Gold and LEED Existing Buildings Operations and Maintenance Certification through energy-efficient design and operations where possible. UC Berkeley also has a carbon-neutral and 100 percent clean energy goal by the year 2025, which it plans to achieve with the assistance of procuring biogas Electrify Carbon offsets and renewables on- and off-site. UC Berkeley energy policies also require no new natural gas connections in new construction or large renovation projects for sites off the cogeneration plant system. Furthermore, UC Berkeley plans on an energy use intensity (EUI) reduction of 2 percent per year through energy-efficient upgrades and retrofits, and to have future projects exceed adopted California Building Code energy-efficiency requirements by at least 20 percent. UC Berkeley seeks to develop multiple fuel sources to provide energy resilience to the Campus Park.

Campus Park Cogeneration Plant

The proposed LRDP Update would include potential upgrades to the existing cogeneration system on the Campus Park, including upgrades, such as repairs to steam tunnels and pipes, to the existing underground steam network. The Campus Park's cogeneration plant consists of a 125 pounds per square inch gauge (psig or gauge pressure) steam distribution infrastructure servicing approximately 120 UC Berkeley buildings and providing approximately 90 percent of the electricity and 100 percent of the steam needs for the Campus Park. Initially a boiler plant, cogeneration (combined heat and power generation) was added to UC Berkeley's facilities in 1987. The three existing boilers were kept as backup for and augmentation to steam requirements. The cogeneration plant operates continuously, 24 hours per day, year-round (except for planned and unplanned outages when the boiler acts as backup) and produces electricity at 12.5 kilovolts and steam at 125 psig. UC Berkeley is considering three options to expand and improve the cogeneration system:

¹² University of California, Berkeley, Energy Use Policy, issued July 1, 2013, effective January 1, 2014, revised October 13, 2020.

- **Option 1 - Central Cogeneration Plant.** This system would replace the existing cogeneration system with a new central cogeneration plant with hot water distribution. The new cogeneration plant would produce electricity and hot water from natural gas. The central utility plant would be in a central area of the Campus Park and be approximately 37,000 square feet. Additional space would be required within a mechanical room or on the roof of every building tied into the system for cooling equipment, such as chillers or packaged units. It would involve installation of new distribution piping, including heating hot water pipes installed from the plant to each building it would serve across the Campus Park. This new cogeneration system would be resilient to electricity outage.
- **Option 2 – Central Heat Recovery System.** This system would replace the existing cogeneration system with a new central heat recovery system. The system would include a central electric heat pump plant supplying hot and chilled water with thermal storage. The new utility plant would potentially be developed at a central location on the Campus Park and be approximately 51,000 square feet. It would include the installation of underground piping and would require two sets of pipes for heating and cooling to be installed from the new central plant to the buildings it serves across the Campus Park. The new cogeneration system would require two thermal storage tanks with associated piping; the location of the thermal storage tanks is flexible. This new system would be all electric, carbon neutral, resilient to natural gas outage, and consistent with the University of California Office of the President (UCOP) mandates.
- **Option 3 - Hybrid Nodal Heat Recovery System.** This system would upgrade the existing cogeneration plant with a new hybrid nodal heat recovery system. This system would add one or two electric heat pump plants supplying hot and chilled water on the northern side of the Campus Park. The existing cogeneration plant would continue to serve the southern side of the Campus Park through natural gas cogeneration and would be replaced at a future date. Improvements to the existing cogeneration plant would be made to the turbine and boilers, as well as to address leaky steam piping, and the existing plant would serve as power backup during emergencies. The one or two new plants would be located on the northwest and northeast sides of the Campus Park, would total 45,000 square feet. They could be developed within new buildings or as stand-alone buildings. In-building cooling space would be required for buildings on the southern half of the Campus Park that remain on the existing plant system. The existing steam pipes on the southern side of the Campus Park would continue to be used, but some piping would need replacement or repair due to age. Two sets of piping, for heating and cooling, would be installed on the northern side of the Campus Park from each of the new nodal plants to the buildings they serve across the Campus Park. Two sets of thermal storage tanks would be required for each new nodal plant, and would be located ideally adjacent to its plant. This upgraded cogeneration system would be an efficient, low-carbon system. The new systems on the north side of the Campus Park would be all-electric, and the systems on the south side of the Campus Park would remain on the existing cogeneration plant; together, the complete system would provide resilience to both power and natural gas outages.

Electricity

The proposed LRDP Update would include upgrades to the existing electric network on the Campus Park, the Hill Campus West, and the Hill Campus East. The proposed electric network would accommodate increased load from growth, electrification, potential comfort cooling, and the warming climate. Upgrades would include improvements to duct bank and electrical loop feeders. UC Berkeley would also increase the electrical capacity of its underground feeds from the Hill Campus East to the Campus Park.

Potential Renewable Energy Systems

- **Solar Array in the Hill Campus:** As a result of recent annual PG&E PSPS program events that limit electrical supply to the Campus Park for several hours or even days, UC Berkeley could develop a large PV solar installation on the Hill Campus East to increase electrical power resilience to the Campus Park. The solar PV project would be a battery energy storage system to control how and when PV-generated electricity is used.
- **Geothermal:** UC Berkeley could develop a geothermal energy system to assist with energy demands and meet carbon-reduction goals. This system could be used for cooling-dominated buildings and would be a closed-loop system.
- **Hydrogen Fuel Cell:** UC Berkeley could implement hydrogen fuel cell technology to produce both heat and electricity. When sourced from renewable fuels, it would have zero carbon emissions, and locally, the only emissions would be water vapor.
- **Biogas Fuel Cells:** Biogas fuel cells could be implemented to produce both heat and electricity. These have the potential to result in zero net emissions depending on fuel source, reduce local emissions, and increase energy efficiency.
- **Alternative Source Heat Pumps:** Alternative source heat pumps move thermal energy from one place, such as the ground, sewer lines, and aquifers, to another. This equipment could be located underground or housed in small rooms and could help UC Berkeley reduce carbon and local emissions.
- **CO₂ Heat Pumps:** UC Berkeley could implement CO₂ heat pumps, which have lower global warming potential than conventional refrigerants and have a lower cost. This would increase efficiency of incorporated applications, such as domestic hot water, and produce zero carbon or local emissions.
- **Phase Change Thermal Storage:** Thermal storage allows for heat or cooling to be produced during times of lower demand, stored, and used during times of higher demand. UC Berkeley could add this system to increase efficiency of heating and cooling; maximize use of on-site renewable energy generation, thus reducing carbon output; reduce the amount of central plant equipment required and corresponding costs; reduce peak electricity demand; and increase resilience during power outages.
- **Flow Batteries:** Flow batteries are electrochemical cells with a storage tank to enable long-duration storage and could be used to reduce peak electricity demand and increase resilience during a power outage.
- **Mechanical Energy Storage:** UC Berkeley could integrate a mechanical energy storage system into the campus electric loop to reduce peak electricity demand and utility charges and provide an alternate source of electricity during a power outage. A mechanical energy storage system would store excess electricity to be used when needed.

3.5.1.7 CONTINUING BEST PRACTICES

UC Berkeley currently implements continuing best practices (CBPs) to ensure environmental impacts from development and ongoing UC Berkeley operations would be reduced and/or avoided to the greatest extent feasible. CBPs are imposed against both future projects and as part of UC Berkeley's standard, ongoing operations. In some cases, CBPs reference existing regulatory requirements that have been determined to be the most effective and practical means of preventing or reducing environmental impacts. The current

CBPs were last updated as part of the 2005 LRDP EIR.¹³ The proposed project includes updates to the existing CBPs to reflect evolving standards, practices, and current regulations. Like the existing CBPs, the updated CBPs would be applied to future development and ongoing operations through implementation of the proposed LRDP Update. As described in further detail in Chapter 5, Environmental Analysis, updated CBPs have been reviewed for their adequacy in reducing and/or avoiding impacts to the environment. In general, the proposed updated CBPs aim to reduce the physical effects of construction and operation of future development on the UC Berkeley campus. The CBPs are listed where relevant in the impact discussions of Chapters 5.1 through 5.18 of this Draft EIR to illustrate how they would help to reduce and/or avoid environmental impacts from potential future development within the scope of the proposed LRDP Update. A comprehensive list of proposed updated CBPs is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR.

3.5.1.8 DEVELOPMENT PROGRAM

Buildout and Population Projections

As discussed under Section 3.1, Overview, the LRDP does not determine future enrollment or population or set a future population limit for the UC Berkeley campus, but guides land development and physical infrastructure to support enrollment projections and activities coordinated by the UCOP. The proposed LRDP Update, like the current LRDP, does not commit UC Berkeley to any specific project, but provides a strategic framework for decisions on potential future projects. For the purposes of developing this strategic framework, the development program does, however, establish a maximum amount of net new growth in UC Berkeley's space inventory through the 2036–37 school year, which the UC Berkeley campus may not substantially exceed without amending the LRDP and conducting additional environmental review as necessary. The buildout projections shown in Table 3-1, Proposed LRDP Update Buildout Projections, provide a foundation for understanding UC Berkeley's long-term space needs. The buildout projections for the proposed development program are organized by campus uses, which include residential, academic life, campus life, and parking; UC Berkeley uses are described in detail in Section 3.5.1.3, Land Use Element. Table 3-1 also includes existing conditions and horizon-year population estimates for undergraduate students, graduate students, and faculty and staff.

In addition to the uses shown in Table 3-1 and described in Section 3.5.1.3, Land Use Element, UC Berkeley's space needs include open space for passive/informal outdoor recreation and to provide scenic resources. Open Space is defined as natural or undeveloped land that provides habitat for wildlife and plants or that is used for recreation, research, or resource-based purposes, including but not limited to purpose-built grass open spaces, plazas, bioswales, glades, lawns, riparian areas along Strawberry Creek, wetlands, forests, and green space in the form of built areas such as rooftop gardens and grasslands in the Hill Campus East and the Hill Campus West. The majority of the natural open space is in the Hill Campus East, but a mix of natural and green spaces is provided on the Campus Park, the Hill Campus West, the Clark Kerr Campus, and the City Environs Properties. The proposed LRDP Update would result in a net change to open space of roughly 6 acres (910 acres of existing open space compared to 916 acres of proposed open space).

¹³ University of California, Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, 2005, State Clearinghouse Number 2003082131.

TABLE 3-1 PROPOSED LRDP UPDATE BUILDOUT PROJECTIONS

Zones	Building Square Footage					Beds	Parking Spaces ^d	Students		Faculty/ Staff
	Total	Residential ^a	Academic Life ^b	Campus Life ^c	Parking			Undergrads	Graduate	
Existing Conditions 2018–19										
Campus Park	8,591,592	–	7,310,284	970,322	310,986	–	1,992	–	–	–
Hill Campus West	911,429	473,658	3,380	434,391	–	1,502	451	–	–	–
Hill Campus East	318,733	–	312,634	6,099	–	–	558	–	–	–
Clark Kerr Campus	452,434	305,913	75,704	70,817	–	1,000	277	–	–	–
City Environs Properties ^e	4,640,769	1,248,715	2,193,899	452,641	745,514	6,518	3,062	–	–	–
Total	14,914,957	2,028,286	9,895,901	1,934,270	1,056,500	9,020	6,340	29,932	9,776	15,421
Horizon Year 2036–37										
Campus Park	11,205,131	–	9,246,588	1,457,044	501,500	–	2,023	–	–	–
Hill Campus West	933,429	473,658	3,380	456,391	–	1,502	366	–	–	–
Hill Campus East	511,233	–	505,134	6,099	–	–	558	–	–	–
Clark Kerr Campus	1,035,525	797,751	75,704	117,070	45,000	3,364	299	–	–	–
City Environs Properties ^e	9,325,888	4,580,919	2,349,684	804,205	1,591,080	15,885	5,316	–	–	–
Total	23,011,206	5,852,328	12,180,489	2,840,809	2,137,580	20,751	8,562	35,000	13,200	19,000
Net Change										
Campus Park	2,613,539	–	1,936,304	486,722	190,514	–	31	–	–	–
Hill Campus West	22,000	–	–	22,000	–	–	(85)	–	–	–
Hill Campus East	192,500	–	192,500	–	–	–	–	–	–	–
Clark Kerr Campus	583,091	491,838	–	46,253	45,000	2,364	22	–	–	–
City Environs Properties ^e	4,685,119	3,332,204	155,785	351,564	845,566	9,367	1,272	–	–	–
Total	8,096,249	3,824,042	2,284,588	906,539	1,081,080	11,731	1,240	5,068	3,424	3,579

Notes: This table excludes any UC Berkeley properties that are outside of the UC Berkeley LRDP Planning Area as shown on Figure 3-2, EIR Study Area.

a. Residential use includes faculty, student, and family housing. Includes the 16 beds on the Housing Project #1 site that are owned by UC Berkeley.

b. Academic Life use includes administrative, classrooms, labs and research space, offices, conference and study space, infrastructure/utility, and other miscellaneous spaces.

c. Campus Life use includes Intercollegiate Athletics, recreation, wellness space, assembly and exhibition facilities, dining facilities, and social spaces.

d. Parking space count includes both structured and surface parking.

e. The City Environs Properties include the proposed Housing Projects #1 and #2.

Source: University of California, Berkeley, and PlaceWorks, 2020.

Potential Areas of New Development, Redevelopment, and Renovation

As part of the proposed LRDP Update planning process, UC Berkeley identified potential areas for new development, redevelopment, and renovation that could accommodate the proposed buildout projections shown in Table 3-1, Proposed LRDP Update Buildout Projections. Potential areas of new development are identified on limited sites that are not currently developed or where a new structure would be constructed, and potential areas of redevelopment are identified on sites where the existing structure would be demolished and a new structure(s) would be constructed in its place. Potential areas of new development, redevelopment and renovation are organized as follows:

- **Potential areas of New Development and Redevelopment.** These areas are listed in Table 3-2, Potential Areas of New Development and Redevelopment, and shown on Figure 3-3, Potential Areas of New Development and Redevelopment.
- **Potential Areas of Renovation.** These areas are identified on sites where existing structures could be remodeled. Potential areas of renovation are listed in Table 3-3, Potential Areas of Renovation Only, and shown on Figure 3-4, Potential Areas of Renovation.

UC Berkeley has also identified locations where potential surface parking could be converted for bicycle, pedestrian, and transit improvements or open space. Potential surface parking conversion for mobility improvements and open space, which are identified in Table 3-4, Potential Surface Parking Conversion for Mobility Improvements and Open Space.

The proposed LRDP Update does not require any specific development projects on any site. The purpose of the potential development assumptions is to illustrate a land use program that would accommodate the proposed LRDP Update buildout projections. The potential areas identified in this section provide a menu of possible options that UC Berkeley has to accommodate potential growth and changes. As previously described in Section 3.5.1.3, Land Use Element, potential future development would be primarily focused on intensive and strategic use of existing UC Berkeley-owned land through determinations of where UC Berkeley can remodel, relocate, densify, or expand current facilities. UC Berkeley may acquire and/or develop additional properties during the EIR buildout horizon that implements the proposed LRDP Update to meet UC Berkeley's physical space needs. While such additional acquisition and/or development would be focused on adjacency or proximity to existing UC Berkeley properties like those shown in Tables 3-2, 3-3, and 3-4, some sites could potentially be located further away.

This EIR evaluates the buildout projections and development assumptions in the proposed LRDP Update at a program-level and evaluates the two proposed mixed-use development projects, Housing Projects #1 and #2, at a project level (i.e., construction and operation). The location and design of future development would be informed by proximity to existing UC Berkeley campus resources and compatibility with surrounding land uses to the extent feasible and would be examined in light of the program-level EIR to determine whether subsequent project-specific environmental documentation would be required, in conformance with CEQA.

3. PROJECT DESCRIPTION

TABLE 3-2 POTENTIAL AREAS OF NEW DEVELOPMENT AND REDEVELOPMENT

				Use ^b		Square Footage		Beds		Parking Spaces		Number of Stories Above Grade		
No.	Project Name *	Project Type ^a	Location	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed ^c	Existing	Proposed Maximum	Year(s) Built
Campus Park (CP)														
CP1	Chemistry Expansion	New Development	Southeast Quadrant	Vacant	Academic Life	0	143,000	0	0	0	0	0	8	N/A
CP2	Dwinelle Lot	New Development	Southwest Quadrant	Parking	Academic Life	0	144,000	0	0	96	0	0	8	N/A
CP3	North Field	New Development	Southeast Quadrant	Campus Life	Academic, Campus Life	0	199,000	0	0	0	0	0	8	N/A
CP4	Sproul Hall South	New Development	Southeast Quadrant	Vacant	Campus Life	0	8,000	0	0	0	0	0	3	N/A
CP5	Architects & Engineers	Redevelopment	Southwest Quadrant	Academic Life, Parking	Campus Life	5,166	15,000	0	0	27	3	3	3	1929
CP6	Alumni House	Redevelopment	Southwest Quadrant	Campus Life	Campus Life	15,326	103,000	0	0	0	0	2	5	1954
CP7	Bechtel Addition	Redevelopment ^e	Northwest Quadrant	Academic Life	Academic Life, Campus Life	47,954	25,000	0	0	0	0	3	4	1980
CP8	Central Plant Expansion	Redevelopment ^e	Southwest Quadrant	Parking	Academic Life	0	21,000	0	0	7	0	0	5	N/A
CP9	Cesar E. Chavez Student Center	Redevelopment	Southwest Quadrant	Campus Life	Campus Life	104,016	129,000	0	0	0	0	4	6	1960
CP10	Cory Hall	Redevelopment	Northeast Quadrant	Academic Life	Academic Life	206,054	233,000	0	0	0	0	6	8	1950
CP11	Data Hub (Former Tolman Hall site)	Redevelopment	Northwest Quadrant	Vacant (Former Tolman Hall)	Academic Life ^d	0	408,000	0	0	0	0	8	9	N/A
CP12	Davis Hall	Redevelopment	Northeast Quadrant	Academic Life	Academic Life	137,806	138,000	0	0	0	0	7	8	1967
CP13	Donner Lab	Redevelopment	Northeast Quadrant	Academic Life, Parking	Academic Life	53,234	141,000	0	0	15	0	5	8	1942
CP14	Dwinelle Annex	Redevelopment	Southwest Quadrant	Academic Life	Academic Life	8,516	10,000	0	0	0	0	2	2	1920, 1924, 1949
CP15	Edwards Stadium *	Redevelopment	Southwest Quadrant	Campus Life, Parking	Academic Life, Campus Life	59,326	281,000	0	0	63	2	3	8	1932
CP16	Evans Hall	Redevelopment	Northeast Quadrant	Academic Life	Campus Life ^d	270,413	100,000	0	0	0	0	14	2	1971
CP17	Haas Pavilion Addition *	Redevelopment ^e	Southwest Quadrant	Parking	Campus Life	0	58,000	0	0	11	5	0	4	N/A
CP18	Hearst Field Annex	Redevelopment	Southeast Quadrant	Academic Life, Parking	Academic Life	34,975	104,000	0	0	38	0	2	8	1988, 1999
CP19	Hearst Mining Memorial Building *	Redevelopment ^e	Northeast Quadrant	Academic Life	Academic Life	141,461	144,461	0	0	0	0	0	1	1907
CP20	Hesse/O'Brien	Redevelopment	Northeast Quadrant	Academic Life, Parking	Academic Life	82,660	245,000	0	0	12	4	4	8	1924, 1959
CP21	Koshland Hall	Redevelopment	Northwest Quadrant	Academic Life	Academic Life	153,700	155,000	0	0	0	0	7	8	1990
CP22	Anthropology and Art Practice-Bancroft	Redevelopment	Southeast Quadrant	Academic Life, Parking	Academic Life, Parking	156,800	459,000	0	0	148	451	6	8	1959
CP23	Lewis Hall	Redevelopment ^e	Northeast Quadrant	Academic Life	Academic Life	68,146	146,000	0	0	0	0	6	9	1948
CP24	McCone Hall	Redevelopment	Northeast Quadrant	Academic Life	Academic Life, Campus Life	123,612	146,000	0	0	0	0	7	8	1961
CP25	Minor Hall Addition and Optometry Clinic Expansion	Redevelopment ^e	Southeast Quadrant	Academic Life	Academic Life	55,516	215,000	0	0	9	0	6	6	1978
CP26	Morgan Hall	Redevelopment	Northwest Quadrant	Academic Life	Academic Life, Campus Life	56,637	131,200	0	0	0	0	5	8	1953
CP27	Piedmont Site	Redevelopment ^e	Southeast Quadrant	Academic Life, Parking	Academic Life, Campus Life, Parking	55,042	415,500	0	0	121	330	3	9	1909, 1910, 1929, 1963
CP28	Recreational Sports Facility Addition East	Redevelopment ^e	Southwest Quadrant	Campus Life	Campus Life	139,884	169,884	0	0	0	0	3	3	1984
CP29	Recreational Sports Facility Addition West	Redevelopment ^e	Southwest Quadrant	Campus Life	Campus Life	48,098	180,000	0	0	0	0	3	5	1984
CP30	Stephens Hall	Redevelopment ^e	Southeast Quadrant	Academic Life	Academic Life	58,733	80,000	0	0	0	0	6	6	1923
CP31	Wellman Courtyard *	Redevelopment	Northwest Quadrant	Academic Life, Parking	Academic Life, Campus Life	788	33,300	0	0	40	0	1	3	Unknown
CP32	Barker Hall	Redevelopment	Northwest Quadrant	Academic Life	Academic Life	86,091	200,000	0	0	0	0	8	8	1964
CP33	Genetics and Plant Biology	Redevelopment	Northwest Quadrant	Academic Life, Parking	Academic Life	26,231	75,000	0	0	0	0	3	6	1990
Hill Campus West (HW) and East (HE)														
HW1	Bowles Lot	New Development	2200 Gayley Road	Parking	Parking, Campus Life	0	30,000	0	0	53	200	0	4	N/A
HW2	Hill Campus West	New Development	Location Not Determined	Vacant	Campus Life	0	20,000	0	0	0	0	0	10	N/A
HW3	Greek Theatre *	Redevelopment ^e	2001 Gayley Road	Campus Life	Campus Life	11,910	15,000	0	0	0	0	2	2	1903

TABLE 3-2 POTENTIAL AREAS OF NEW DEVELOPMENT AND REDEVELOPMENT

No.	Project Name *	Project Type ^a	Location	Use ^b		Square Footage		Beds		Parking Spaces		Number of Stories Above Grade		Year(s) Built
				Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed ^c	Existing	Proposed	
													Maximum	
HE1	Hill Campus East	New Development	Location Not Determined ^f	Vacant	Academic Life	0	175,000	0	0	0	0	0	3	N/A
Clark Kerr Campus (CK)														
CK1	Clark Kerr – Central *	Redevelopment	Central Area	Residential, Academic Life, Campus Life, Parking	Residential, Campus Life	59,688	349,000	111	1,550	16	1	4	8	1950, 1952, 1960, 1968
CK2	Clark Kerr – Hillside *	Redevelopment	Hillside Area	Campus Life, Parking	Campus Life	19,704	40,000	0	0	42	4	4	8	1955
CK3	Clark Kerr – NW *	Redevelopment	Northwest Area	Campus Life, Parking	Residential, Campus Life	1,757	53,000	0	235	86	7	4	5	1954
CK4	Clark Kerr – SE	Redevelopment	Southeast Area	Residential, Campus Life, Parking	Residential, Campus Life	17,226	200,000	2	615	28	0	3	5	1928, 1930
CK5	Clark Kerr – SW *	Redevelopment	Southwest Area	Residential, Academic Life, Parking	Residential, Campus Life, Parking	42,106	234,000	144	840	155	400	4	4	1931, 1940
City Environs Properties (CE)														
CE1	Smyth-Fernwald	New Development	Bounded by Smyth Road, Fernwald Road, Dwight Way, Hillside Avenue	Campus Life	Academic Life, Campus Life	0	10,000	0	0	0	0	0	1	N/A
CE2	1995 University Avenue	Redevelopment	1995 University Avenue	Academic Life, Parking	Residential, Academic Life, Parking	244,249	450,000	0	550	232	240	7	12	1979
CE3	2000 Carleton Street	Redevelopment	2000 Carleton Street	Academic Life	Residential, Campus Life	256,563	257,000	0	330	14	3	3	7	1958
CE4	2111 Bancroft Way	Redevelopment	2111 Bancroft Way	Academic Life, Parking	Academic Life	45,955	76,000	0	0	46	3	5	8	1961
CE5	Anna Head *	Redevelopment ^e	2420 Bowditch Street, 2538 & 2538A Channing Way	Academic Life, Campus Life, Parking	Academic Life, Campus Life, Parking	27,531	210,000	0	0	17	1	4	8	1895
CE6	Beverly Cleary	Redevelopment	2424 Channing Way	Residential	Residential, Campus Life	58,355	176,000	236	540	39	0	5	12	1992
CE7	Channing Ellsworth	Redevelopment	Haste Street, between Ellsworth and Dana Streets	Parking	Residential, Campus Life, Parking	61,884	713,000	0	2,980	200	600	2	12	1961
CE8	Channing/Bowditch ^g	Redevelopment	2334 & 2350 Bowditch Street; 2515, 2521 & 2547 Channing Way	Academic Life	Residential, Campus Life	44,531	100,000	0	285	8	0	2	6	1910, 1920, 1928, 1930
CE9	Co-Op Housing	Redevelopment	2427 Dwight Way, 2400 Haste Street	Residential, Campus Life	Residential, Campus Life	Unknown	350,000	360	1,000	0	0	4	12	Unknown
CE10	Foothill-La Loma	Redevelopment	Hearst Avenue, between La Loma Avenue and Highland Place	Residential	Residential, Campus Life	80,257	185,000	382	430	0	0	2	7	1990
CE11	Fulton-Bancroft	Redevelopment	2200 Bancroft Way	Academic Life, Parking	Residential, Campus Life	26,950	276,000	0	1,200	81	2	1	11	1974
CE12	Oxford Tract	Redevelopment	Oxford Street, between Hearst Avenue and Virginia Street	Academic Life, Parking	Residential, Campus Life, Parking	171,948	1,145,000	0	1,640	28	627	1	12	1950, 1960, 1980, 1981, 1989, 1999, 2002, 2003
CE13	Unit 3	Redevelopment	2400 Durant Avenue	Residential, Campus Life	Residential, Campus Life, Parking	212,654	624,000	1,144	1,980	0	688	10	12	1964
CE14	University Hall	Redevelopment	Oxford Street, between University Avenue and Addison Street	Academic Life, Parking	Academic Life, Parking	150,887	660,000	0	0	47	1,000	9	15	1959
CE15	Housing Project #1 * ^h	Redevelopment	Bounded by Berkeley Way, Oxford Street, University Avenue, Walnut Street	Academic Life, Campus Life	Residential, Campus Life, Parking	31,052	506,000	16	770	42	21	4	14	1930, 1935, 1950
CE16	Housing Project #2 * ^h	Redevelopment	2556 Haste Street	Campus Life	Residential, Campus Life, Parking	748	449,000	0	1,312	0	11	1	17	1992

Notes: *Indicates existing designated historic resource (see Chapter 5.4, Cultural Resources, of this Draft EIR).

a. “New development” projects would occur on limited sites that are currently vacant. “Redevelopment” projects would involve the demolition of existing structure and construction of new structures.

b. Use categories include the following:

 “Residential” use includes faculty, student, and family housing.

 “Academic Life” use includes administrative, classrooms, labs and research space, offices, conference and study space, study space, infrastructure/utility, and other miscellaneous spaces.

 “Campus Life” use includes Intercollegiate Athletics, recreation, wellness space, assembly and exhibition facilities, dining facilities, and social spaces.

“Parking” includes both structured and surface parking. See Section 3.5.1.3 of the Draft EIR Project Description for more details.

c. Most of the new parking would be structured. Note that the zero parking space assumption applies to parking for future users and does not include temporary parking for loading/unloading or for service vehicles.

d. This site is one of the two options for the new cogeneration power plant.

e. These potential areas of redevelopment could also include additions and/or renovations.

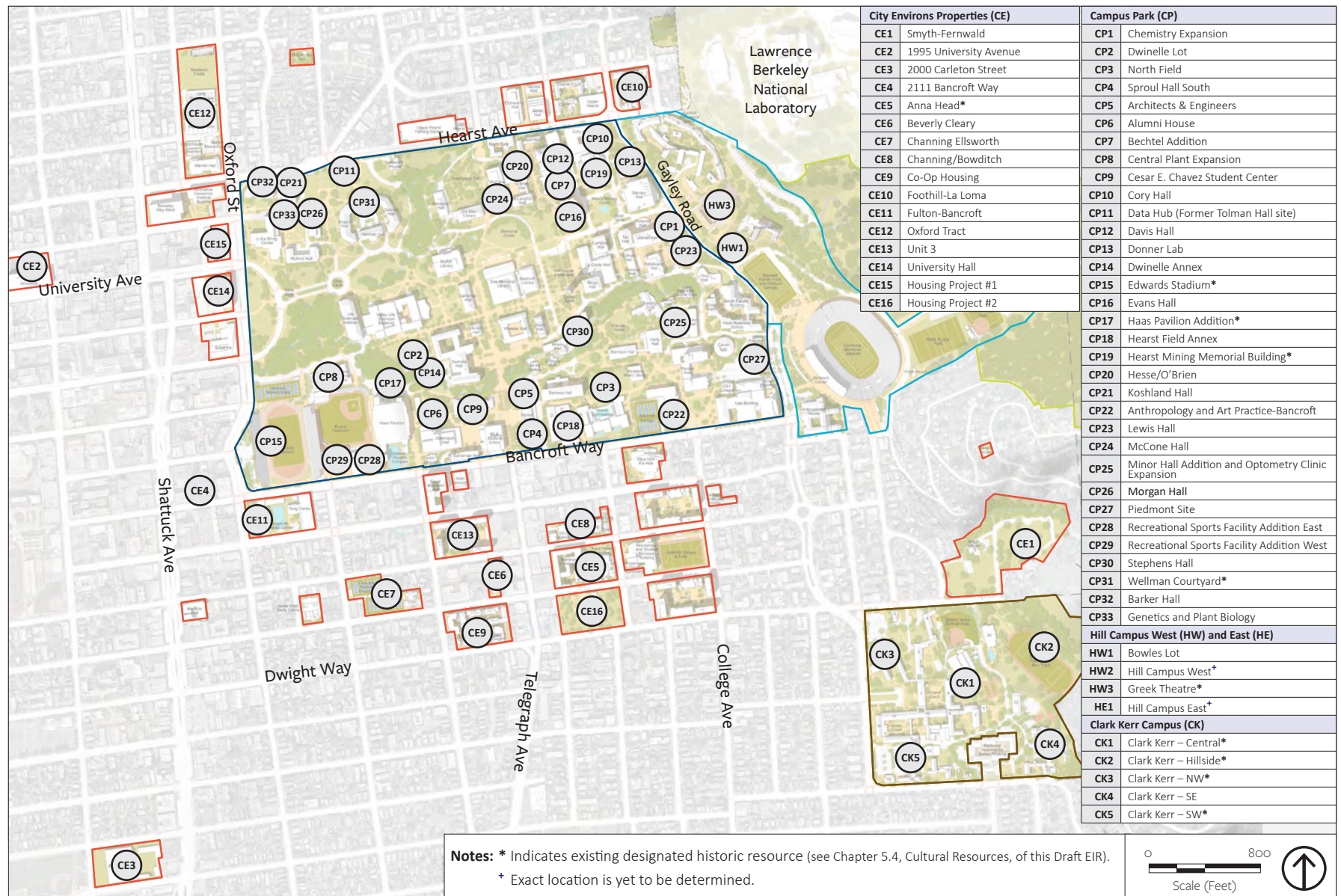
f. The location for this potential development is not yet determined but could be located near the Mathematical Science and Research Institute and Space Science Laboratory.

g. This site includes Epworth Lot.

h. This area of potential redevelopment is evaluated at the project level (construction and operation) in this EIR. See Section 3.5.2, Housing Project #1, and Section 3.5.3, Housing Project #2.

Source: University of California, Berkeley, Architectural Resource Group, and PlaceWorks, 2020.

3. PROJECT DESCRIPTION



Source: Alameda County, 2019; ESRI, 2020; Sasaki and Page, 2019; PlaceWorks, 2021.

Figure 3-3

Potential Areas of New Development and Redevelopment

TABLE 3-3 POTENTIAL AREAS OF RENOVATION ONLY

No.	Project Name *	Location	Use ^a		Existing Square Footage	Year Built
			Existing	Proposed		
Campus Park (CP)						
CP-a	Durant Hall *	Southwest Quadrant	Academic Life	Academic Life	21,866	1911
CP-b	Evans Baseball Diamond	Southwest Quadrant	Campus Life	Campus Life	4,000	N/A
CP-c	Hearst Memorial Gym *	Southwest Quadrant	Campus Life	Campus Life	124,197	1927
CP-d	Hilgard Hall *	Northwest Quadrant	Academic Life	Academic Life	77,055	1917
CP-e	McLaughlin Hall	Northeast Quadrant	Academic Life	Academic Life	49,388	1931
CP-f	Mulford Hall	Northeast Quadrant	Academic Life	Academic Life	93,420 ^b	1948
CP-g	North Gate Hall *	Northeast Quadrant	Academic Life	Academic Life	23,533	1906
CP-h	Old Art Gallery	Southeast Quadrant	Academic Life, Campus Life	Academic Life, Campus Life	4,018	1904
CP-i	Sather Tower *	Northeast Quadrant	Campus Life	Campus Life	11,681	1914
CP-j	Senior Hall *	Southeast Quadrant	Campus Life	Campus Life	2,940	1906
CP-k	South Hall *	Southeast Quadrant	Academic Life	Academic Life	30,401	1873
CP-l	Sproul Hall	Southeast Quadrant	Academic Life	Academic Life	110,919	1941
CP-m	University House *	Northwest Quadrant	Residential, Campus Life	Residential, Campus Life	18,112	1911
CP-n	Wellman Hall *	Northwest Quadrant	Academic Life	Academic Life	43,910	1912
CP-o	Zellerbach Hall	Southwest Quadrant	Academic Life	Academic Life	153,118	1968
Hill Campus West (HW)						
HW-a	Haas Clubhouse	Centennial Road	Campus Life	Campus Life	11,813	1959
HW-b	Witter Field Complex	Centennial Road	Campus Life	Campus Life	658	1994
HW-c	Stern Hall	Gayley Road	Residential, Campus Life	Residential, Campus Life	86,959	1942
City Environs Properties (CE)						
CE-a	Etcheverry Hall	2521 Hearst Ave	Academic Life	Academic Life	177,281	1964
CE-b	Soda Hall (8)	Hearst Avenue at Etcheverry Lane	Academic Life	Academic Life	109,588	1994
CE-c	Unit 1 High-Rises	2650 Durant Avenue	Residential, Campus Life	Residential, Campus Life	168,725	1960
CE-d	Unit 2 High-Rises	2612 Haste Street	Residential, Campus Life	Residential, Campus Life	165,630	1960

Notes. * Indicates existing designated historic resource (see Chapter 5.4, Cultural Resources, of this Draft EIR).

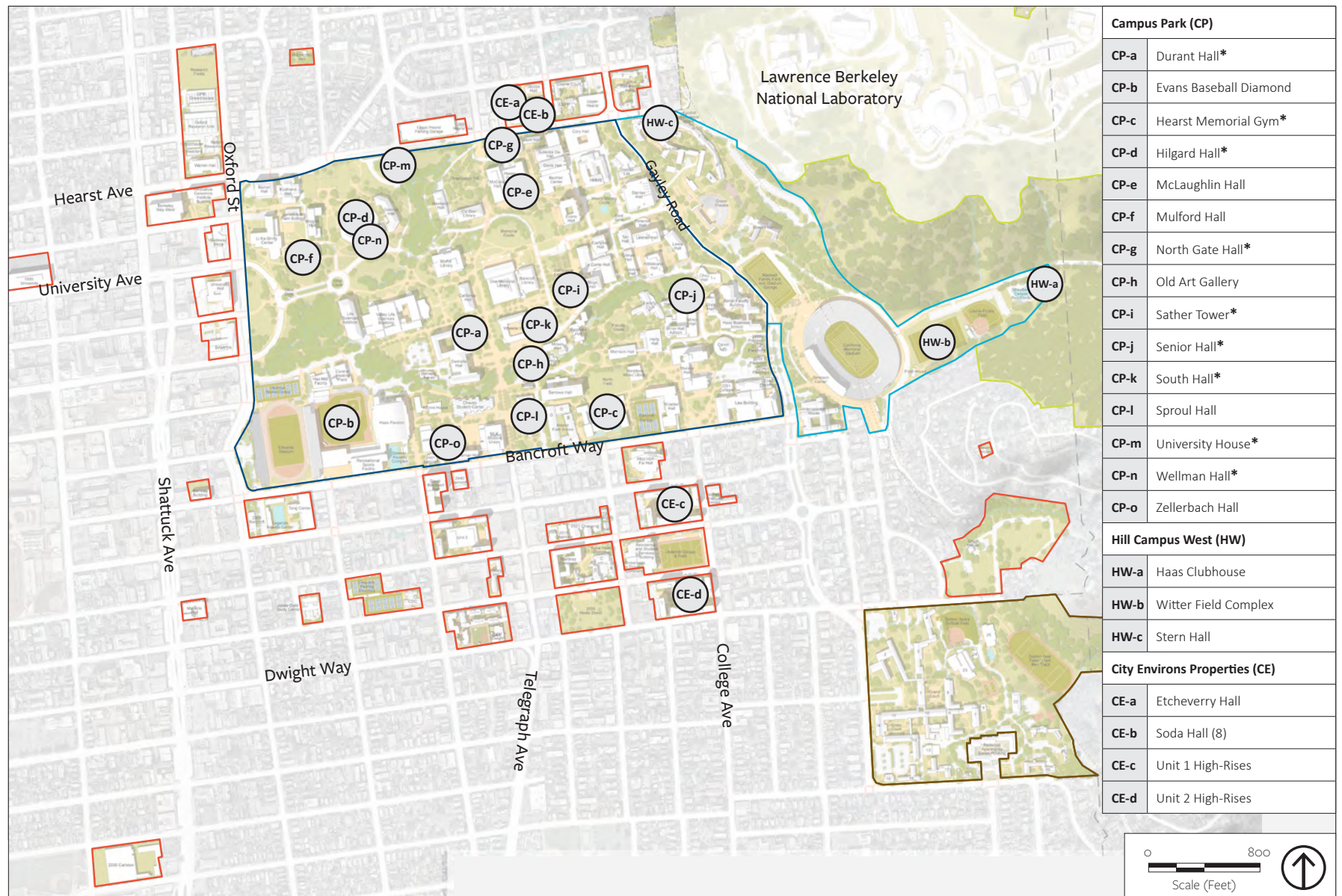
Potential renovation projects include interior and exterior renovations. The existing building square footage would remain the same.

a. Use categories include: 1) "Residential" use includes faculty, student, and family housing; 2) "Academic Life" use includes administrative, classrooms, labs and research space, offices, conference and study space, study space, infrastructure/utility, and other miscellaneous spaces; and 3) "Campus Life" use includes Intercollegiate Athletics, recreation, wellness space, assembly and exhibition facilities, dining facilities, and social spaces.

b. The Mulford Hall renovation includes Mulford Lot, which could include a change in parking spaces from the 11 existing spaces to 4 spaces.

Source: University of California, Berkeley, Architectural Resource Group, and PlaceWorks, 2020.

3. PROJECT DESCRIPTION



Source: Alameda County, 2019; ESRI, 2020; Sasaki and Page, 2019; PlaceWorks, 2021.

Figure 3-4

Potential Areas of Renovation

Campus Park
Hill Campus West
Hill Campus East
Clark Kerr Campus
City Environs Properties

Notes: * Indicates existing designated historic resource (see Chapter 5.4, Cultural Resources, of this Draft EIR).

3. PROJECT DESCRIPTION

TABLE 3-4 POTENTIAL SURFACE PARKING CONVERSION FOR MOBILITY IMPROVEMENTS AND OPEN SPACE

No.	Project Name	Location	Proposed	Parking Spaces	
				Existing	Proposed
Campus Park (CP)					
CP-P1	Barker Service Area	Northwest Quadrant	Bike/Pedestrian Improvements	7	3
CP-P2	Barrows Annex	Southeast Quadrant	Bike/Pedestrian Improvements	4	0
CP-P3	Social Sciences Building Hall - East	Southeast Quadrant	Bike/Pedestrian Improvements	2	2
CP-P4	Barrow Lane	Southeast Quadrant	Bike/Pedestrian Improvements	49	6
CP-P5	Bechtel Drive	Northeast Quadrant	Bike/Pedestrian Improvements	4	4
CP-P6	Campanile Way	Northeast Quadrant	Bike/Pedestrian Improvements	5	5
CP-P7	College Lot	Southeast Quadrant	Bike/Pedestrian Improvements	6	4
CP-P8	Eshleman Road	Southeast Quadrant	Bike/Pedestrian Improvements	11	1
CP-P9	Faculty Club Lane	Southeast Quadrant	Bike/Pedestrian Improvements	7	1
CP-P10	Frank Schlessinger Way	Southwest Quadrant	Bike/Pedestrian Improvements	85	9
CP-P11	Hildebrand Hall	Southeast Quadrant	Bike/Pedestrian Improvements	12	10
CP-P12	Moses Court	Southeast Quadrant	Open Space	11	2
CP-P13	North Crescent	Northwest Quadrant	Bike/Pedestrian Improvements	13	0
CP-P14	Sather Lot	Northeast Quadrant	Bike/Pedestrian/Transit Improvements	7	7
CP-P15	South Drive	Southeast Quadrant	Bike/Pedestrian/Transit Improvements	20	11
CP-P16	Southwest Crescent	Northwest Quadrant	Bike/Pedestrian/Transit Improvements	35	0
CP-P17	University Drive	Northeast Quadrant	Bike/Pedestrian/Transit Improvements	18	10
CP-P18	Wellman Courtyard	Northwest Quadrant	Open Space	47	7
CP-P19	West Circle	Northwest Quadrant	Bike/Pedestrian/Transit Improvements	16	7
CP-P20	Wickson Road	Northwest Quadrant	Bike Promenade/Transit Improvements	16	2
Hill Campus West (HW) and Hill Campus East (HE)					
HW-P1	Stern Hall	West Fire Lane	Bike/Pedestrian/Service Improvements	4	2
HW-P2	SSL Upper and Lower Lots	7 Gauss Way	Bike/Pedestrian/Transit Improvements	76	76
HE-P1	Witter Rugby Field Lot	5 Centennial Drive	Open Space	112	6

Notes: Space Science Laboratory = SSL; "Surface parking" includes parking lots and street parking. Some displaced parking areas may be accommodated for under new development and redevelopment projects, as listed in Table 3-2.

Source: University of California, Berkeley, and PlaceWorks, 2020.

3. PROJECT DESCRIPTION

Proposed Housing Program

Table 3-5, Proposed LRDP Update Housing Program, provides a detailed summary of the proposed housing program, organized by campus zone. Table 3-5 includes existing conditions and horizon year housing estimates for undergraduate, graduate, faculty/staff, and non-university beds.

TABLE 3-5 PROPOSED LRDP UPDATE HOUSING PROGRAM

Zones	Undergraduate Beds	Graduate Beds	Faculty/ Staff Beds	Non-University Beds	Total Beds
Existing Conditions 2018–19					
Campus Park	–	–	–	–	–
Hill Campus West	1,502	–	–	–	1,502
Hill Campus East	–	–	–	–	–
Clark Kerr Campus	972	–	28	–	1,000
City Environs Properties	6,248	250	4	16	6,518
Housing Project #1	–	–	–	16	16
Housing Project #2	–	–	–	–	–
Other City Environs Properties	6,248	250	4	–	6,502
Total	8,722	250	32	16	9,020
Horizon Year 2036–37					
Campus Park	–	–	–	–	–
Hill Campus West	1,502	–	–	–	1,502
Hill Campus East	–	–	–	–	–
Clark Kerr Campus	3,339	–	25	–	3,364
City Environs Properties	12,889	2,315	556	125	15,885
Housing Project #1	770	–	–	–	770
Housing Project #2	1,179	–	8	125	1,312
Other City Environs Properties	10,940	2,315	548	–	13,803
Total	17,730	2,315	581	125	20,751
Net Change					
Campus Park	–	–	–	–	–
Hill Campus West	–	–	–	–	–
Hill Campus East	–	–	–	–	–
Clark Kerr Campus	2,367	–	(3)	–	2,364
City Environs Properties ^a	6,641	2,065	552	109	9,367
Housing Project #1	770	–	–	(16)	754
Housing Project #2	1,179	–	8	125	1,312
Other City Environs Properties	4,692	2,065	544	–	7,301
Total	9,008	2,065	549	109	11,731

Source: University of California, Berkeley, PlaceWorks, 2020.

3.5.2 HOUSING PROJECT #1: ANCHOR HOUSE

The proposed Housing Project #1, also known as the Helen Diller Anchor House or Anchor House, would involve the demolition of the existing on-site structures and the construction and operation of a new mixed-use building with a combination of residential, campus life, academic life, and uses not operated by UC Berkeley. The conceptual plans for the proposed Housing Project #1 currently include student housing, nonresidential space, and ground-floor academic, office, and/or commercial uses. A summary of the proposed development is shown in Table 3-6, Housing Project #1 Proposed Development, and the project location, existing site conditions, and the proposed redevelopment assumptions are described below.

TABLE 3-6 HOUSING PROJECT #1 PROPOSED DEVELOPMENT

	Land Use	Number	Population	Employees	Gross Square Footage
Residential	Apartments	244	770 students ^a	-	235,000
	Beds	770			
	Amenities ^b	-	-	-	43,000
	Open Space/Rooftop Garden	-	-	-	24,000
	Housekeeping/ Maintenance/ Housing Services Offices	-	-	8 ^c	10,000
<i>Subtotal of Residential Gross Square Footage</i>					312,000
Campus Life	Fitness	-	-	-	8,000
	Commuter Lounge	-	-	-	1,500
	Events Center	-	-	-	6,500 ^d
	Restrooms	-	-	-	4,000
<i>Subtotal of Campus Life Gross Square Footage</i>					20,000
Public and Non-UC Berkeley	Commercial Suites ^e	8	-	38 ^f	17,000 ^g
<i>Subtotal of Public and Non-UC Berkeley Gross Square Footage</i>					17,000
Parking	Employee Parking Spaces	21	-	-	10,000
	Long-Term Bicycle Parking	250	-	-	4,200
<i>Subtotal of Gross Square Footage</i>					14,200
Miscellaneous ^h	-	-	-	-	162,800
		Grand Totals	770	46	526,000
Pervious/Impervious Surfaces					Square Feet
Pervious Surfaces (landscaped areas)					1,905
Impervious Surfaces (building footprints and hardscapes)					38,210

Notes: Building specifications evaluated in this Draft EIR are approximate for the purposes of evaluating the project and are subject to insignificant changes as final plans evolve (CEQA Guidelines Section 15003).

a. Assumes one student per bed.

b. Amenities include uses such as a library/study space, teaching kitchen and scullery, dorm lounge, a living room area, and other similar uses.

c. Assumes 6 housekeeping/maintenance staff and 2 housing services staff on-site daily.

d. 5,800-gross-square-foot (GSF) event center space + 700 GSF event center back of house = 6,500 GSF

e. The commercial space that could be used for UC Berkeley or leased to non-UC Berkeley vendors for a variety of uses depending on the tenant and what the market will bear, including, but not limited to, office, research, maker space, retail, cultural institution, education, or medical.

f. 17,000 GSF commercial/ 450 square feet per employee = 37.8 employees.

g. 15,500 GSF commercial space + 1,500 square feet commercial back of house = 17,000 GSF total commercial space.

h. Miscellaneous uses account for circulation, heating, ventilation, and air conditioning, loading docks, flexible basement storage, and other utility infrastructure.

Source: BDE Architecture (project applicant), December 2020.

3.5.2.1 LOCATION

The Housing Project #1 site is in the City Environs Properties immediately west of the Campus Park in Downtown Berkeley. As shown on Figure 3-5, Housing Project #1 Site Aerial, the project site is bounded by Berkeley Way on the north, Oxford Street on the east, University Avenue on the south, and Walnut Street on the west. The Housing Project #1 site consists of six parcels that are all owned by UC Berkeley. The parcels are listed by address and the assigned assessor's parcel numbers (APNs).

- | | |
|--------------------------------------|--|
| ▪ 1921 Walnut Street (APN 57-2045-1) | ▪ 2161 University Avenue (APN 57-2045-4) |
| ▪ 1952 Oxford Street (APN 57-2045-2) | ▪ 1933 Walnut Street (APN 57-2045-5) |
| ▪ 1990 Oxford Street (APN 57-2045-3) | ▪ 1925 Walnut Street (APN 57-2045-6) |

Downtown Berkeley serves as the city's primary civic, office, entertainment, and retail center. The City of Berkeley zoning designation for the project site is "C-DMU Outer Core" (Downtown Mixed-Use) and the City of Berkeley General Plan land use designation is Downtown.

The project site is in the Downtown Berkeley Priority Development Area¹⁴ and a Transit Priority Area.¹⁵ The Housing Project #1 site is approximately 0.16 miles (870 feet) northeast of the Downtown Berkeley BART station. The nearest public transit facilities to the site are two bus stops on Oxford Street operated by AC Transit. The bus stops are Stop 50400 at Oxford Street and University Avenue, approximately 100 feet from the southeast corner of the project site, and Stop 56521 at Oxford Street and University Avenue, approximately 150 feet from the southeast corner of the project site.

3.5.2.2 EXISTING CONDITIONS

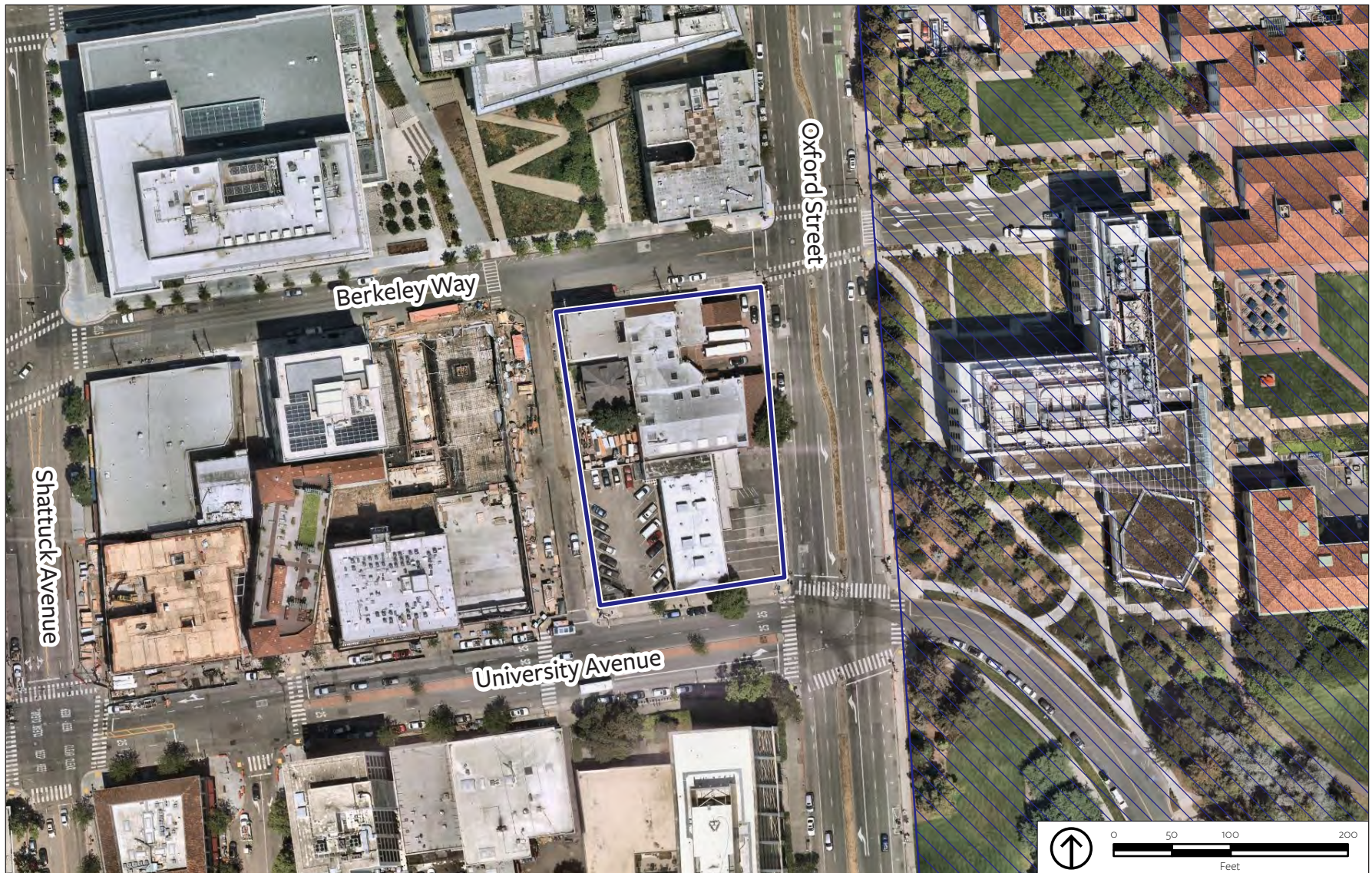
Existing Uses

The 0.92-acre (40,000-square-foot) project site is a rectangular parcel that is developed and in an urbanized area. The natural topography of the project site is relatively flat with an approximately 10-foot drop in slope east to west. The site is occupied by surface parking, UC Berkeley office space, eight apartments with 8 units (16 beds), UC Berkeley's shuttle maintenance garage, and vacant commercial buildings. UC Berkeley's shuttle garage, referred to as Oxford Garage, is on the northeastern corner of the site and was built in 1930. On December 21, 1981, the garage was designated a City of Berkeley historical landmark. The garage is also listed in the California State Historic Resources Inventory.¹⁶

¹⁴ Metropolitan Transportation Commission, Priority Development Areas (current).
<http://opendata.mtc.ca.gov/datasets/priority-development-areas-current>, accessed August 13, 2020.

¹⁵ Metropolitan Transportation Commission, 2017. Transportation Priority Areas (2017).
<http://opendata.mtc.ca.gov/datasets/transit-priority-areas-2017?geometry=-122.304%2C37.858%2C-122.224%2C37.881>, accessed August 13, 2020.

¹⁶ Knapp Architects, October 10, 2018. *UC Oxford Garage – 1952 Oxford Street and 1925 Walnut Street Historical Assessment*.



Source: Alameda County, 2019; ESRI, 2020; PlaceWorks, 2020; Sasaki and Page, 2019.



Figure 3-5
Housing Project #1 Site Aerial

Surrounding Uses

The surrounding properties include a residential mixed-use building, a restaurant, and UC Berkeley's Innovative Genomics Institute Building to the north in the City Environs Properties; the Li Ka Shing Center on the Campus Park to the east; University Hall to the south in the City Environs Properties; and private (non-UC Berkeley) residential mixed-use development (currently under construction)¹⁷ to the west. The properties to the north, south, and west are under the jurisdiction of the City of Berkeley. The Berkeley General Plan land use designations for these properties include Avenue Commercial, Medium-Density, and High-Density Residential to the north; Downtown to the south; and Downtown and Medium-Density Residential to the west. The surrounding properties are zoned Multifamily Residential and Downtown Mixed-Use. The surrounding City of Berkeley properties are within the Berkeley Downtown Area Plan.

3.5.2.3 DEVELOPMENT COMPONENTS

Design Characteristics

Site Layout and Building Size

Conceptual site plans for the proposed Housing Project #1 are shown on Figure 3-6, Housing Project #1 Conceptual Site Plan Level 1, and Figure 3-7, Housing Project #1 Conceptual Site Plan Level 2. The building footprint would cover the entirety of the project site, excluding the sidewalks and accompanying streetscape along the perimeter. The ground floor would include campus life facilities and approximately six commercial areas that could be used by UC Berkeley or leased to non-UC Berkeley vendors for a variety of uses depending on the tenant and what the market will bear, including but not limited to, office, research, maker space, commercial, cultural institution, education, or medical. The second floor would consist of additional facilities serving residents and UC Berkeley affiliates, and a courtyard located in the center of the floor with open air above, encircled by private student housing units on the higher floors of the building. The 13th floor would also include event space with a terrace. Additional details by project component are described below.

The proposed building would consist of 16 total stories: 2 below ground for storage, parking, maintenance, building equipment, student activities, and utilities facilities; and 14 above ground. The project site is highest at the northeast corner (Berkeley Way and Oxford Street) and lowest at the southwest corner (Walnut Street and University Avenue). The elevation ranges from approximately 210 feet above mean sea level to approximately 195 feet above mean sea level at these locations. Proposed building elevations are shown on Figures 3-8 through 3-11.

¹⁷ This property at 2145 University Avenue is currently under construction with a mixed-use development consisting of 25 apartments and ground floor commercial. <https://millcreekplaces.com/community/modera-berkeley/>. Accessed August 13, 2020.

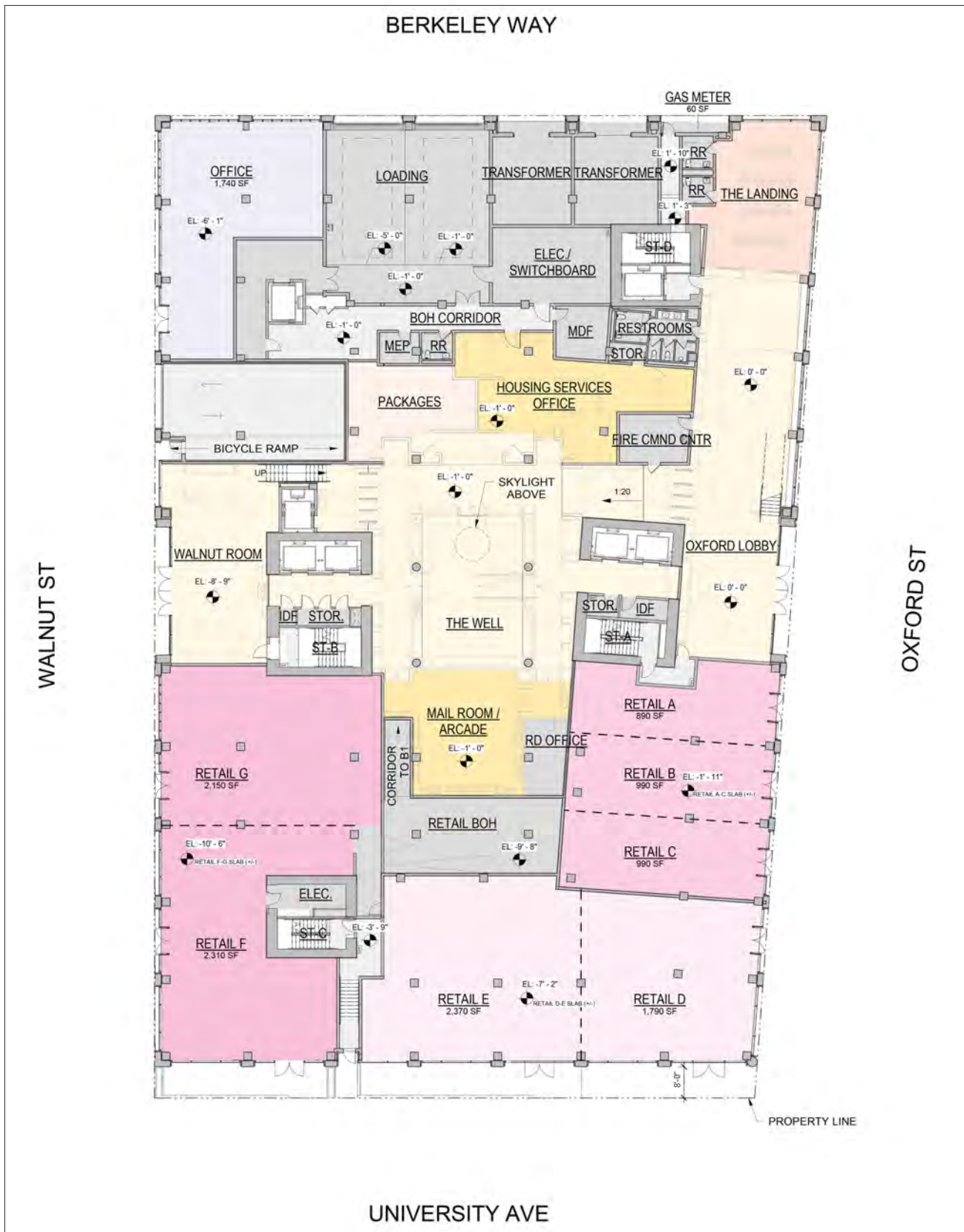
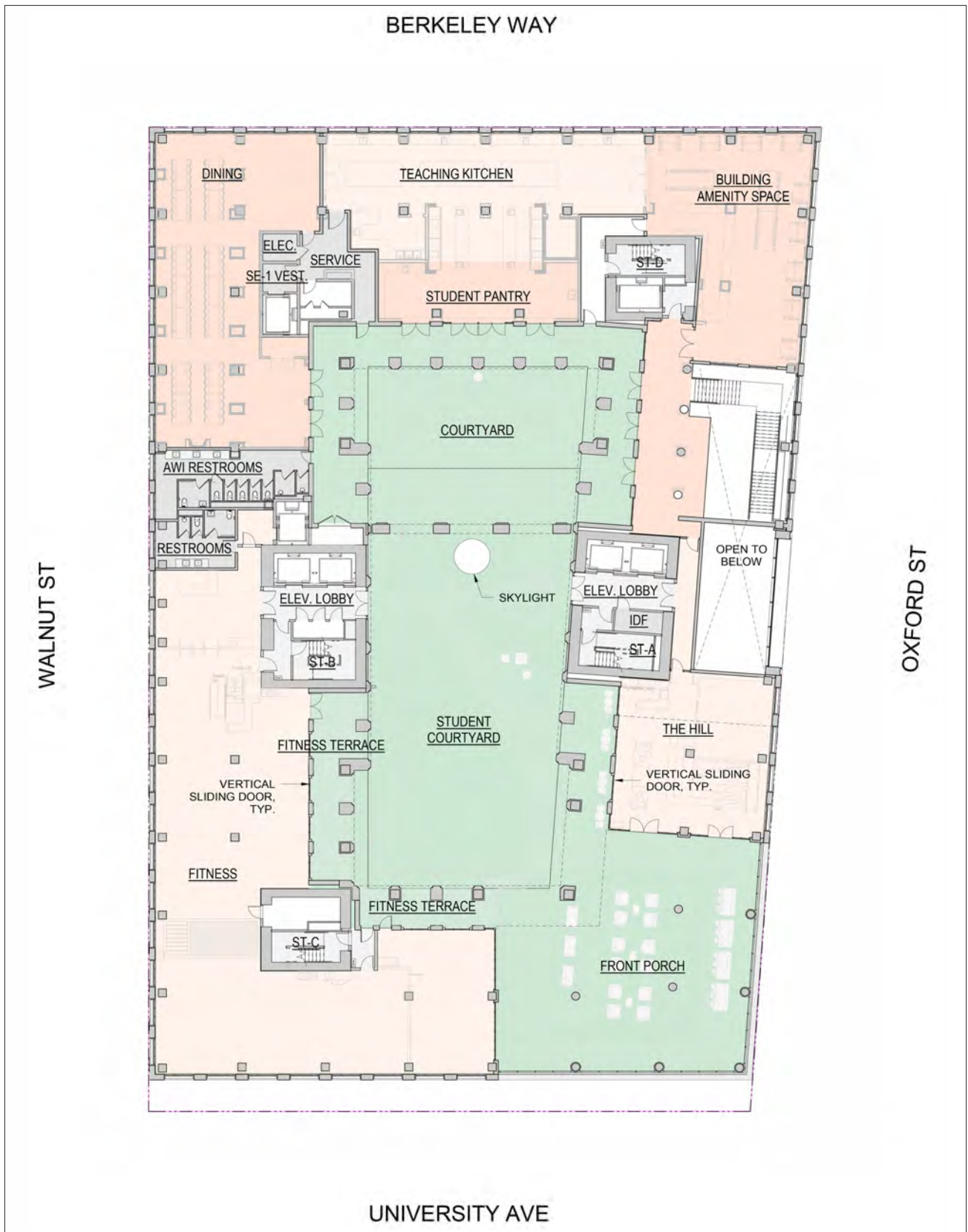


Figure 3-6

Housing Project #1 Site Plan Level 1



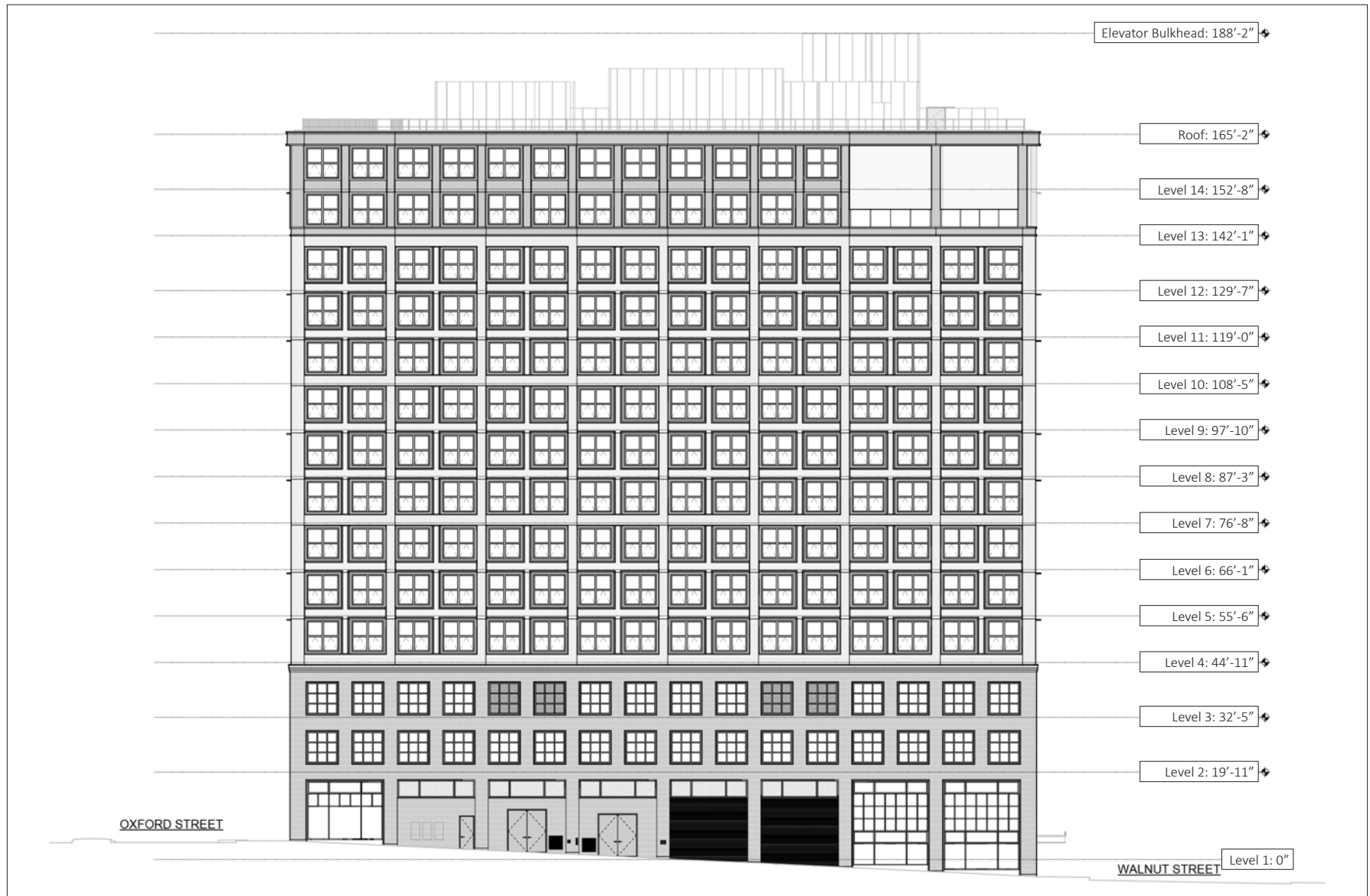
Source: BDE Architecture, 2021.

Figure 3-7

Housing Project #1 Site Plan Level 2



3. PROJECT DESCRIPTION



Source: BDE Architecture, 2021.

Figure 3-8
Housing Project #1 North Elevation

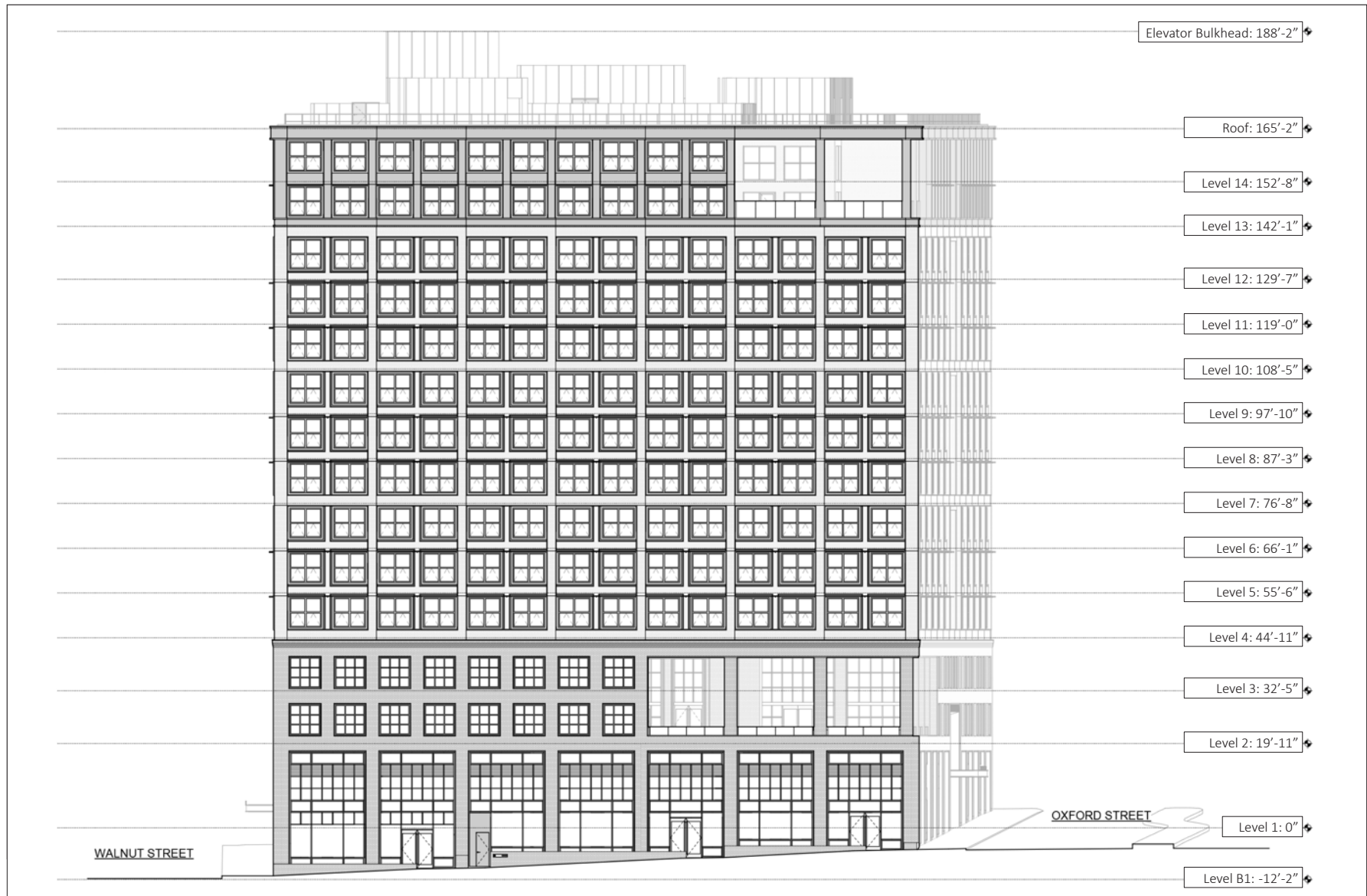
3. PROJECT DESCRIPTION



Source: BDE Architecture, 2021.

Figure 3-9
Housing Project #1 East Elevation

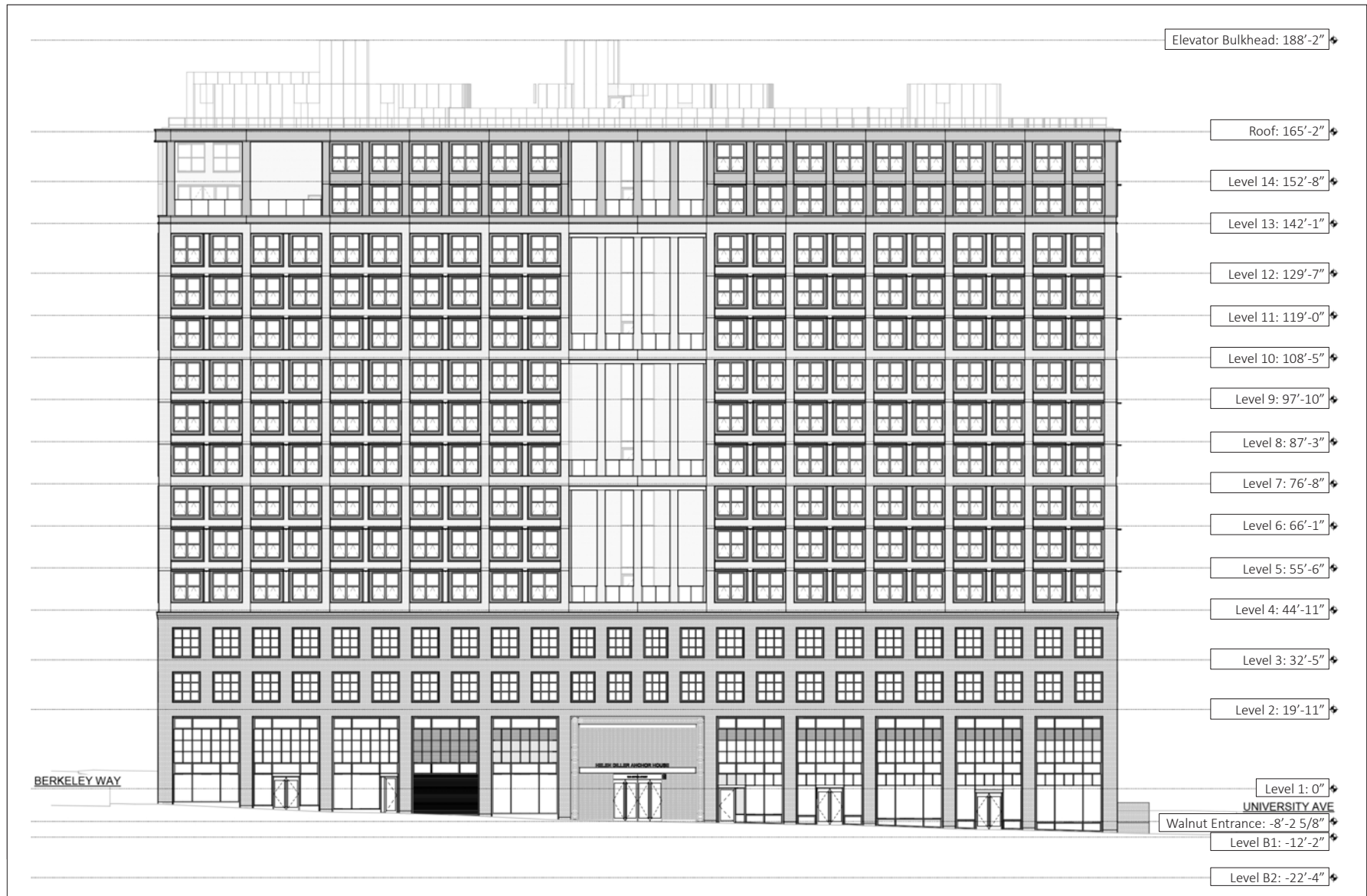
3. PROJECT DESCRIPTION



Source: BDE Architecture, 2021.

Figure 3-10
Housing Project #1 South Elevation

3. PROJECT DESCRIPTION



Source: BDE Architecture, 2021.

Figure 3-11
Housing Project #1 West Elevation

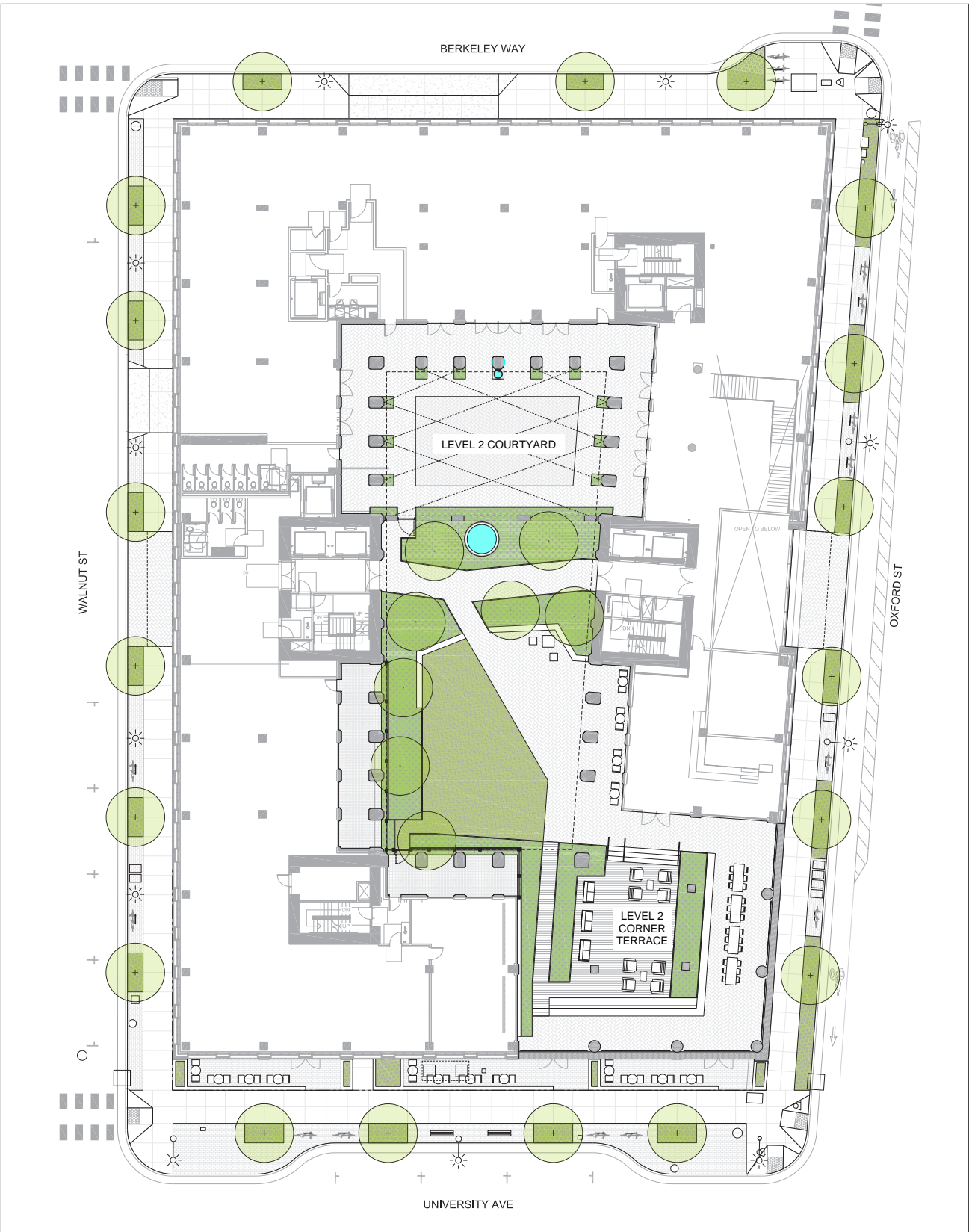
At ground level, the building would be taller when viewed from the south at ground level compared to than when viewed from the north due to the difference in slope of the site. Considering the viewing points at midblock on each of the four sides, the roofline of the building would be approximately 165 feet above ground level on Berkeley Way and Oxford Street, and approximately 175 feet above ground level on Walnut Street and University Avenue. Rooftop equipment, architectural screening and enclosures, and parapet walls would extend in varying places above the roofline up to a maximum total building height of 190 to 200 feet from Oxford Street.

Streetscape and Landscape

Proposed Housing Project #1 would replace all existing curbs, gutters, and sidewalks along the project frontage according to City of Berkeley standards. The proposed building façade would be adjacent to the sidewalk on the northern, eastern, and western sides and have a setback of approximately eight feet from the sidewalk on the southern side. The proposed Housing Project #1 would install streetscape features along all four sides of the proposed building perimeter and sidewalks, including trees, benches (along University Avenue), and bicycle racks as well as street-parking payment kiosks and trash receptacles. Approximately 18 trees would be planted along the perimeter. In addition, the rooftop would have a vegetable/flower garden. The proposed landscaping would be consistent with the surrounding landscape and would include native and/or adaptive and drought-resistant plant materials grouped by hydrozones (i.e., areas of similar water use). Most plantings would be drought-tolerant grasses, shrubs, and trees that, once established, are adapted to a dry summer and intermittent rain in the winter season. A conceptual landscape plan is shown on Figure 3-12, Housing Project #1 Conceptual Landscape Plan, and a conceptual rooftop plan is shown on Figure 3-13, Housing Project #1 Conceptual Rooftop Plan.

Lighting and Glare

The source, intensity, and type of exterior lighting for the project site would be typical for user orientation and safety needs. All on-site lighting would be low-level illumination, downward facing, and shielded to reduce light spillover or glare. Interior lighting would include varied lighting design appropriate for the different spaces and in accordance with all applicable codes and standards, including energy codes and performance standards. All exterior surface and aboveground mounted fixtures would be sympathetic and complementary to the overall architectural theme. Fixtures would be selected to minimize effects of light pollution, with full cutoff and low-glare light distribution, and fixtures would be located beneath canopies and soffits to conceal upward light spill. Exterior lighting would be controlled by astronomical time clock and photocells, have dimming capability, and meet egress light levels where required by code. Street lighting in sidewalks around the project would conform to City of Berkeley and UC Berkeley standards. Glass would comprise less than 50 percent of each façade of the building exterior.

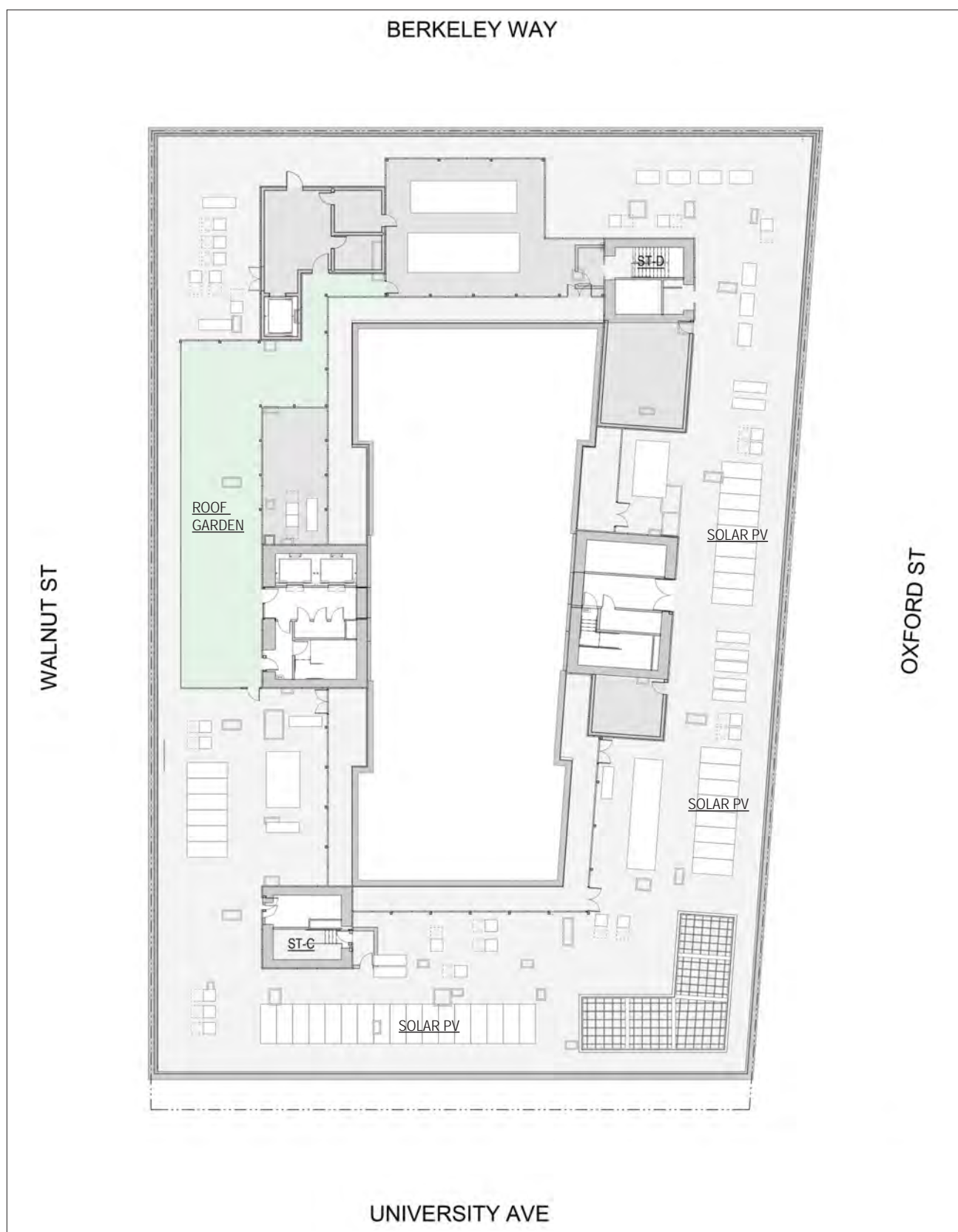


Source: BDE Architecture, 2020.

Figure 3-12

Housing Project #1 Landscape Plan





Source: BDE Architecture, 2021.

Figure 3-13

Housing Project #1 Rooftop Plan



Residential: Student Housing

The proposed Housing Project #1 would involve construction of approximately 245 apartments for students in a combination of studios, two-bedroom apartments, and four-bedroom apartments and with up to 770 beds. Apartment units would be on floors 4 through 14. All apartments would include private restrooms, kitchens, and laundry appliances. One new resident per bed is assumed; therefore, this project would accommodate up to 770 students on the site.

Residential amenities would be provided for residents and UC Berkeley affiliates only and would include a teaching kitchen; library, lounges, and study areas; and useable open space made up of a courtyard with outdoor seating area, greenery, and covered and uncovered porches that are proposed on floors 2 and 13. Other amenities include housekeeping services, lobby, secure bicycle storage, and maintenance shop. There is no vehicular parking for the residential component. On-site parking is provided in the first basement level for commercial employees and building operations.

Campus Life

The proposed Housing Project #1 would include campus life facilities such as a commuter lounge, fitness area, other lounges, events centers, and restrooms. These facilities would be on the ground floor and second floor and would primarily serve the student housing residents; however, some areas would be available for use by UC Berkeley affiliates, such as lobby and lounge space. These uses would not be available to the public, with the exception of the event centers, which would be accessible to invited members of the public for UC Berkeley functions. There is no vehicular parking for the proposed campus life component.

Public and Non-UC Berkeley Uses

The proposed Housing Project #1 includes commercial suites that could be used by UC Berkeley or leased to non-UC Berkeley vendors for a variety of uses depending on the tenant and what the market will bear, including, but not limited to, office, research, maker space, commercial, cultural institution, education, or medical. Commercial space is made up of seven suites that may be combined into larger spaces depending on the use. These spaces would be accessible from entrances off Oxford Street, University Avenue, Walnut Street, and Berkeley Way. The commercial space would have interior access to a commercial back-of-house area. It is unknown at this time which specific businesses would lease these suites; therefore, the specific operational hours are not known. As described in Table 3-6, Housing Project #1 Proposed Development, the proposed commercial component could generate up to 46 employees at the site, depending on the tenant.

Circulation

Vehicle Access and Parking

The proposed project would not alter existing vehicular traffic patterns around the project site. Public on-street parking around the project site would be reconfigured to allow for proposed circulation improvements, and it is anticipated that the number of on-street spaces on adjacent streets would be

reduced from 18 to 10 spaces. The parking lane along Oxford Street is proposed to be eliminated and replaced by a cycle track¹⁸ with an adequate buffer zone. The sidewalks would be widened in some areas along Oxford Street and University Avenue with bulb-outs on Berkeley Way and University Avenue to accommodate vehicle pullover and parking. The proposed building would not include parking for residents or visitors; payment kiosks for temporary street parking would be located on Berkeley Way, Walnut Street, and University Avenue. The proposed Housing Project #1 would include up to 21 on-site parking spaces for commercial employees and building facilities personnel in a below-ground parking garage. The parking garage would be accessed from a vehicle ramp with a roll-up security door off Walnut Street. Adjacent to this vehicle ramp would be a pedestrian path with keycard access. Additionally, two loading bays with roll-up doors would be located off Berkeley Way for delivery trucks, accessible internally on the ground floor.

Bicycle and Pedestrian Access

The commercial components would have access to each individual shop from entrances off Oxford Street, Walnut Street, and University Avenue. Two main pedestrian entrances into separate lobbies of the student housing component would be off Oxford Street and Walnut Street. Security turnstiles would be placed before the entrance to the dorm lounge in the center of the first story, and the dorm lounge would lead to housing services offices, four main elevators and stairway lobbies, and mailbox rooms. Secured side entrances to additional exit stairs would also be located off Berkeley Way and University Avenue. Security keycards for residents would be used for secure access into the residential facilities via the entrances on Oxford Street and Walnut Street.

Sidewalks would surround the perimeter of the building, with pedestrian access to the various building components on all sides. Bulb-outs and directional ramps would require realignment of crosswalks and modifications of traffic signals along Oxford Street at the Berkeley Way and University Avenue intersections.

Bicycle racks would be located along the sidewalks on all four sides of the building. In addition, approximately 250 long-term, secure bicycle parking spaces for residents would be on the below-ground stories next to the commercial employee parking garage.

Utilities and Service Connections

Water Supply

Water would be supplied to the project site by EBMUD. Domestic water would be supplied through one 8-inch pipe connecting to an existing water main underneath Oxford Street. Fire water service for the building would connect to the same water main through one 8-inch pipe. The fire water tank and fire pump room would be on the lowest of the below-ground stories of the building.

¹⁸ A cycle track is an exclusive bicycle facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bicycle lane.

Sanitary Sewer

Sanitary sewer services for the proposed Housing Project #1 would connect to the existing City of Berkeley sanitary sewer system. Two 10-inch sanitary waste pipes would connect to an existing sanitary sewer line underneath Oxford Street. A sewer ejector/sand oil interceptor system would be on the lower belowground story of the building.

Stormwater

The proposed Housing Project #1 would result in approximately 1,905 square feet of pervious surfaces and approximately 38,210 square feet of impervious surfaces. This represents approximately a net decrease (-4.5 percent) in impervious surfaces. Storm drainage for the proposed Housing Project #1 site would connect to the City of Berkeley's storm drain system. If not part of a future UC Berkeley stormwater credit system, stormwater would be treated on-site and directed to the City of Berkeley's storm drain system at the intersection of University Avenue and Walnut Street. Sidewalk surface runoff around the project site would be directed by the downward slope of the project site to the south and west to existing stormwater catch basins near the intersections of University Avenue with Walnut Street and Oxford Street. In addition, a 12-inch storm drainage connection would be located on the southern side of the building.

Electricity

Electricity would be provided through East Bay Community Energy, with infrastructure maintained by PG&E. The proposed project would connect to existing electrical infrastructure currently servicing the surrounding area. As described in the "Sustainability" section, below, the site would include a solar PV system that would provide approximately 25 kilowatts of electricity.

Telecommunications

Telecommunications and broadband services would be provided by connection to UC Berkeley's campuswide broadband system and existing utility providers in the area, such as AT&T, Comcast, or Sonic. The proposed Housing Project #1 would include appropriate on-site infrastructure to connect to the existing electrical and telecommunication systems.

Sustainability

The proposed Housing Project #1 includes several sustainable project features. These include the provision of 24 solar PV panels that would occupy 30 percent of the roof area and provide up to 25 kilowatts of electricity. It is anticipated that the power generated by the solar panels would provide approximately 30 percent of the building's cooling requirement. The building would incorporate sun shades above all apartment windows on the eastern, southern, and western facades to reduce heat gain and increase comfort inside the apartments. The proposed Housing Project #1 is expected to have an Energy Use Intensity of 29 kilo-British thermal unit (kBtu) per square foot per year. As previously stated, all landscaping would include native and/or adaptive and drought-resistant plant materials of similar water use and

adapted to a dry summer and intermittent rain in the winter season. The proposed Housing Project #1 would be a LEED-certified Gold project, with potential for Platinum certification.

Site Preparation and Construction

The proposed Housing Project #1 would involve demolition of approximately 41,000 square feet of existing buildings and parking lots on the project site, including two street trees. Demolition, site preparation, and grading would be completed over an approximately 10-week period. Debris hauled off-site would include approximately 48,000 cubic yards of soil. Typical equipment to be used for demolition, grading, and trenching could include backhoes, excavators, concrete saws, graders, dozers, scrapers, and water trucks.

The building construction phase(s) would take approximately 30 to 34 months and would consist of the total building area and hardscape (e.g., driveways, sidewalks, curb, gutters). See Table 3-6, Housing Project #1 Proposed Development, for building details. Typical equipment to be used for building construction could include forklifts, backhoes, crane, loaders, aerial lifts, generators, welders, cement mixers, rollers, pavers, and air compressors. While pile driving is not currently proposed, this EIR conservatively assumes it could be required during the construction phase.

During demolition and construction, vehicles, equipment, and materials would be staged and stored on the project site when practical. The construction site and staging areas would be clearly marked, and construction fencing would be installed to prevent disturbance and safety hazards. A combination of on- and off-site parking facilities for construction workers would be identified during the demolition, grading, and construction phases.

3.5.3 HOUSING PROJECT #2: PEOPLE'S PARK

The proposed Housing Project #2 would involve the demolition of the existing on-site structures and park amenities and the construction and operation of two new mixed-use buildings with a combination of residential, campus life, academic life, and uses not operated by UC Berkeley. The conceptual plans for the proposed Housing Project #2 currently include student housing, nonresidential space, ground-floor commercial, non-UC Berkeley affordable and supportive housing (housing for lower-income or formerly homeless), and public open space. A summary of the proposed development is shown in Table 3-7, Housing Project #2 Proposed Development, and the project location, existing site conditions, and proposed redevelopment assumptions are described below.

3.5.3.1 LOCATION

The Housing Project #2 site is in the City Environs Properties on the site currently known as People's Park. The project site is three blocks south (0.2 miles) of the Campus Park at 2556 Haste Street and is assigned APN 55-1875-40-1. The City of Berkeley's zoning designation for the site is "R-3" (Multifamily Residential) and the City of Berkeley General Plan land use designation is Open Space. The project site is bounded by Haste Street to the north, Bowditch Street to the east, Dwight Way to the south, and commercial buildings that front Telegraph Avenue to the west (see Figure 3-14, Housing Project #2 Site Aerial).

3. PROJECT DESCRIPTION

TABLE 3-7 HOUSING PROJECT #2 PROPOSED DEVELOPMENT

	Land Use	Number	Population	Employees	Gross Square Footage
Student Housing Building					
Residential	Apartments	166	1,179 students, 8 staff/faculty ^a	-	219,000
	Beds	1,187			
	Amenities ^b	-	-	-	14,000
	Housekeeping/Maintenance Offices	-	-	39 ^c	4,500
Subtotal of Residential Gross Square Footage					237,500
Campus Life	Fitness and Yoga Studios	-	-	-	2,000
	Theatre and Game Room	-	-	-	1,500
	Recording Studio/Practice Room	-	-	-	500
	Academic Center	-	-	-	1,500
	Communal Kitchen/Maker Space	-	-	-	300
	Conference Space	-	-	-	6,000
	Restrooms	-	-	-	200
Subtotal of Campus Life Gross Square Footage					12,000
Public	Market	-	-	6 ^d	3,000
	People's Park Indoor Memorial	-	-	-	500
Subtotal of Public Use Gross Square Footage					3,500
Parking	Long-Term Bicycle Parking	129	-	-	1,000
Miscellaneous ^e	-	-	-	-	102,000
Total for Student Housing Building		-	1,187	45	356,000
Affordable and Supportive Housing Building					
Residential	Apartments/Beds	125	125 residents	-	55,280
	Amenities ^f	-	-	-	2,260
	Housekeeping/Maintenance	-	-	3 ^g	2,380
	Services and Property Offices	-	-	7 ^h	2,270
Subtotal of Residential Gross Square Footage					62,190
Academic Life	University Academic Clinic	-	-	2	7,000
Parking	Employee Parking Spaces	11	-	-	3,300
	Bicycle/Wheelchair Storage	62	-	-	740
Subtotal of Parking Gross Square Footage					4,040
Miscellaneous ^e	-	-	-	-	18,740
Total Affordable and Supportive Housing Building		-	125	12	91,970
Open Space ⁱ	-	-	-	-	82,000
Grand Totals		-	1,312	57	529,970
Pervious/Impervious Surfaces					Square Feet
Pervious Surfaces (landscaped areas)					60,000
Impervious Surfaces (building footprints and hardscapes) ^j					62,000

Notes: Building specifications evaluated in this Draft EIR are approximate for the purposes of evaluating the project and are subject to insignificant changes as final plans evolve (CEQA Guidelines Section 15003).

a. Assumes one resident per bed.

b. Amenities for student housing include lobby area, social and study lounges, video/call booths, shared laundry rooms, and other similar uses.

c. Assumes 8 housekeeping/custodial staff, 11 maintenance staff, and 20 housing services staff on-site daily.

d. 2,750 gross square feet (GSF) commercial/450 square feet per employee = 6.1 employees

e. Miscellaneous uses account for circulation, heating, ventilation, and air conditioning and other utility infrastructure.

f. Amenities for affordable and supportive housing include lobby, mail, laundry, common room, kitchen, restrooms, and similar uses.

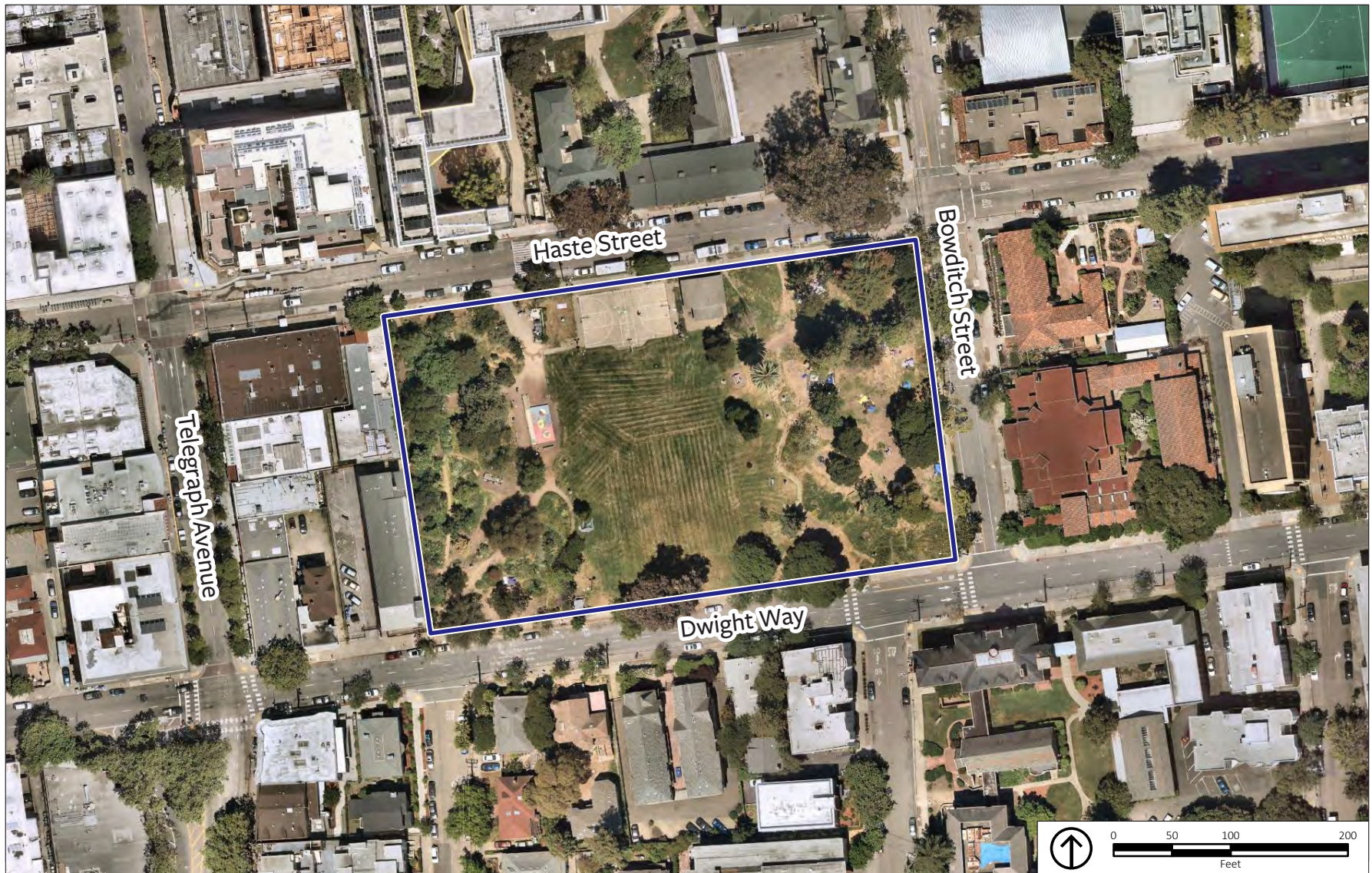
g. Assumes staff is on-site daily.

h. Assumes a community development coordinator, licensed social worker supervisor, three case managers, and two interns.

i. Open space includes hardscaping/walkways, landscaping, lawn, grove, community garden, space under south wing, People's Park memorial area.

j. Includes the student housing building footprint at 20,400 square feet, the proposed affordable and supportive housing building at 19,580 square feet, and the proposed hardscapes at 22,180 square feet.

Source: University of California, Berkeley, People's Park Housing Project: Detailed Project Program, June 1, 2020.



Source: Alameda County, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

 Project Site

Figure 3-14
Housing Project #2 Site Aerial

The Housing Project #2 site is in the Southside/Telegraph Avenue Priority Development Area¹⁹ and a Transit Priority Area.²⁰ The nearest public transit to the site are two bus stops on Telegraph Avenue operated by AC Transit. The bus stops are Stop 51244 at Telegraph Avenue and Haste Street, approximately 250 feet from the northwest corner of the project site, and Stop 57711 at Telegraph Avenue and Dwight Way, approximately 250 feet from the southwest corner of the project site.

3.5.3.2 EXISTING CONDITIONS

Existing Uses

The 2.8-acre (122,000-square-foot) project site is a rectangular parcel in an urbanized area that has for the last several decades been used as an informal park. The natural topography of the project site is generally flat with an approximately 20-foot drop in elevation from east to west. Current uses on-site include gardens and lawn space, a paved basketball court, picnic tables, a small wooden stage (2 to 3 feet tall and 40 by 20 feet in area), and a public restroom building. A variety of trees are located throughout the site, primarily on the western and eastern edges, with open space in the interior. People's Park is currently used as a venue for occasional special events, including concerts, fairs, basketball tournaments, and theatrical performances. At the time of the preparation of this EIR, the site was primarily occupied by people without housing (homeless) in multiple encampments—from single sleeping bags and small tents to large tents and makeshift tarps/tents. People's Park is known for being the site of protests and community action. It is a City of Berkeley historic landmark and is also listed in the California State Historic Resources Inventory.²¹

Surrounding Uses

Surrounding uses are made up of mixed-use, commercial, residential, and institutional land uses, including a number of historic buildings. UC Berkeley student housing and the Anna Head Alumnae Hall are to the north, the First Church of Christ Scientist and the Vedanta Society are to the east, and Julia Morgan's Baptist Seminary and neighborhood homes are to the south. The western border is shared with multifamily units that front the project site and Dwight Way to the south, and a commercial use that fronts Haste Street. Just to the west of these uses is an active commercial area, including a variety of restaurants, cafes, and retail uses that front Telegraph Avenue to the west. The surrounding properties to the east, south, and west are under the jurisdiction of the City of Berkeley. The Berkeley General Plan land use designations for these properties include High-Density Residential to the east and south and Avenue Commercial to the west. The surrounding properties are zoned Multifamily Residential, High-Density Residential Subarea, Residential Mixed-Use Subarea, and Telegraph Avenue Commercial. The project site is in Berkeley's Southside neighborhood and is at the intersection where this neighborhood meets the South Berkeley and Elmwood neighborhoods.

¹⁹ Metropolitan Transportation Commission, Priority Development Areas, <http://opendata.mtc.ca.gov/datasets/priority-development-areas-current>, accessed August 13, 2020.

²⁰ Metropolitan Transportation Commission, 2017, Transportation Priority Areas, <http://opendata.mtc.ca.gov/datasets/transit-priority-areas-2017?geometry=-122.304%2C37.858%2C-122.224%2C37.881>, accessed August 13, 2020.

²¹ Berkeley Architectural Heritage Association. Berkeley Landmarks, http://berkeleyheritage.com/berkeley_landmarks/landmarks1-100.html, accessed June 22, 2020.

3.5.3.3 DEVELOPMENT COMPONENTS

Design Characteristics

Site Layout and Building Size

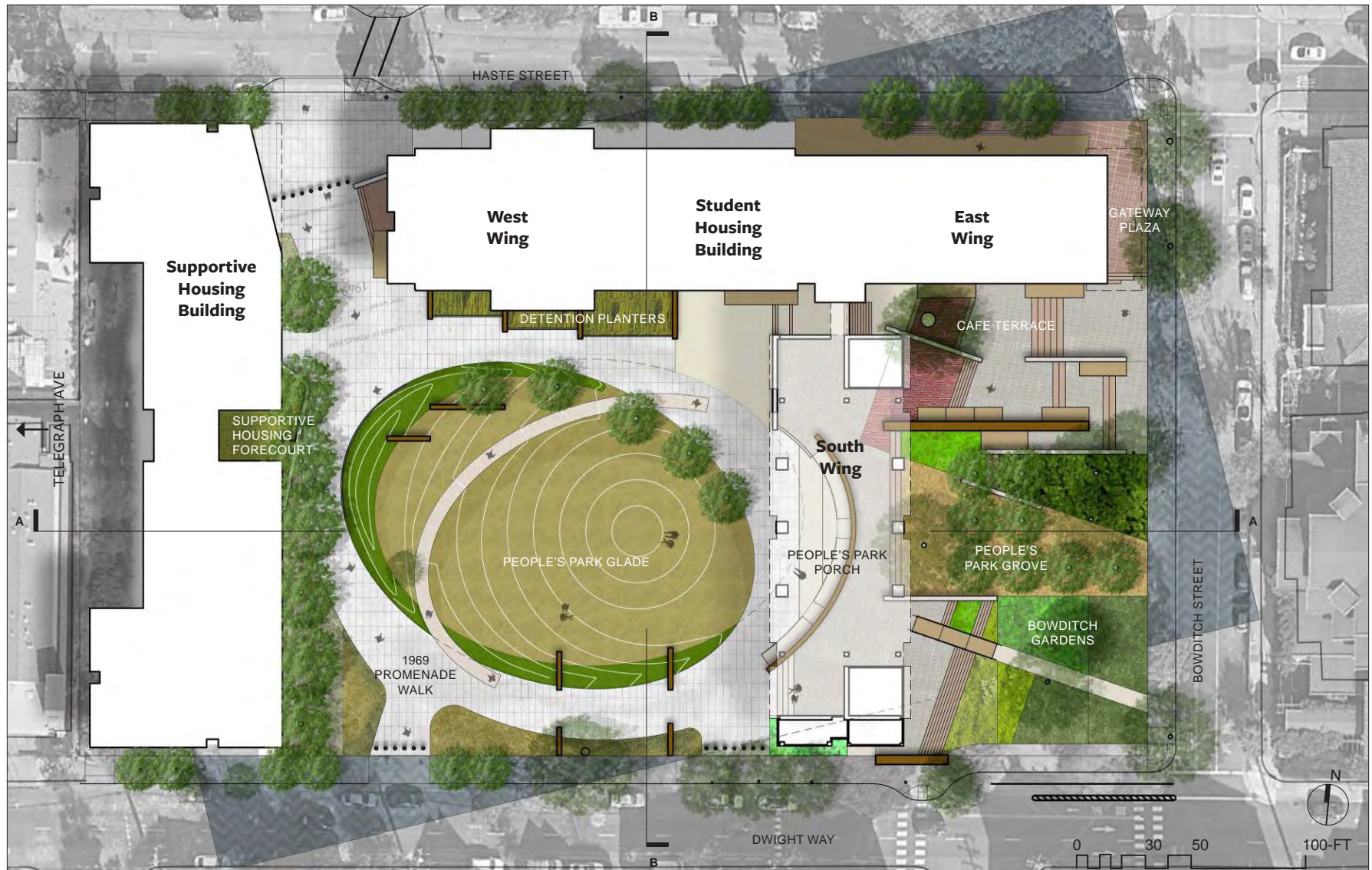
A conceptual site plan for Housing Project #2 is shown on Figure 3-15, Housing Project #2 Conceptual Site and Landscape Plan. The proposed project would consist of three main components—a student housing building, an affordable and supportive housing building, and public open space with commemorative elements to honor the history and legacy of People’s Park. Over 50 percent of the project site would be devoted to open space, landscaping, hardscape, and the incorporation of a commemorative program.

The proposed student housing building on the northeastern portion of the site would be a single T-shaped building. The east and west wings (crossbar of the ‘T’) would front Haste Street; the east wing would extend to the east toward Bowditch Street, and the west wing would extend to the west about a two-thirds of the way to Telegraph Avenue. The south wing (leg of the ‘T’) would extend south and front Dwight Way. The south wing would be raised to accommodate a breezeway underneath that provides cross-site access. The east wing would have 13 stories, the west wing would have 17 stories, and the south wing would have 7 stories. There are no subterranean levels proposed.

The site generally slopes downward from east to west. The existing elevation along Bowditch Street is roughly 264 feet above mean sea level, and the elevation along the west property line (adjacent to existing buildings) is roughly 243 feet above mean sea level, an elevation difference of approximately 20 feet across the site. Therefore, the building heights of the student housing building would be taller at ground level when viewed from west to east due to the difference in slope. Figures 3-16 through 3-19 show the proposed building heights.

At its maximum height, the roofline on the west wing, the tallest wing of the proposed student housing building, would be approximately 200 feet when viewed from the west side of the project site and approximately 190 feet when viewed from the east side of the project site. The east and west wings step up to meet the higher density that is anticipated in Downtown Berkeley pursuant to the Berkeley Downtown Area Plan. The south wing is raised above the ground plane and shorter at seven stories, allowing for more solar access in the open space to the east and west of the south wing.

The affordable and supportive housing building would be oriented to allow views to the park and open space. The affordable and supportive housing building would be five stories and approximately 60 feet tall when viewed from all sides. This building would extend along the western edge of the site from Haste Street to Dwight Way and would front the public open space.



Source: Leddy Maytum Stacy Architects, 2020. Hood Design Studio, 2020. PlaceWorks, 2021.

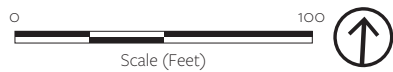
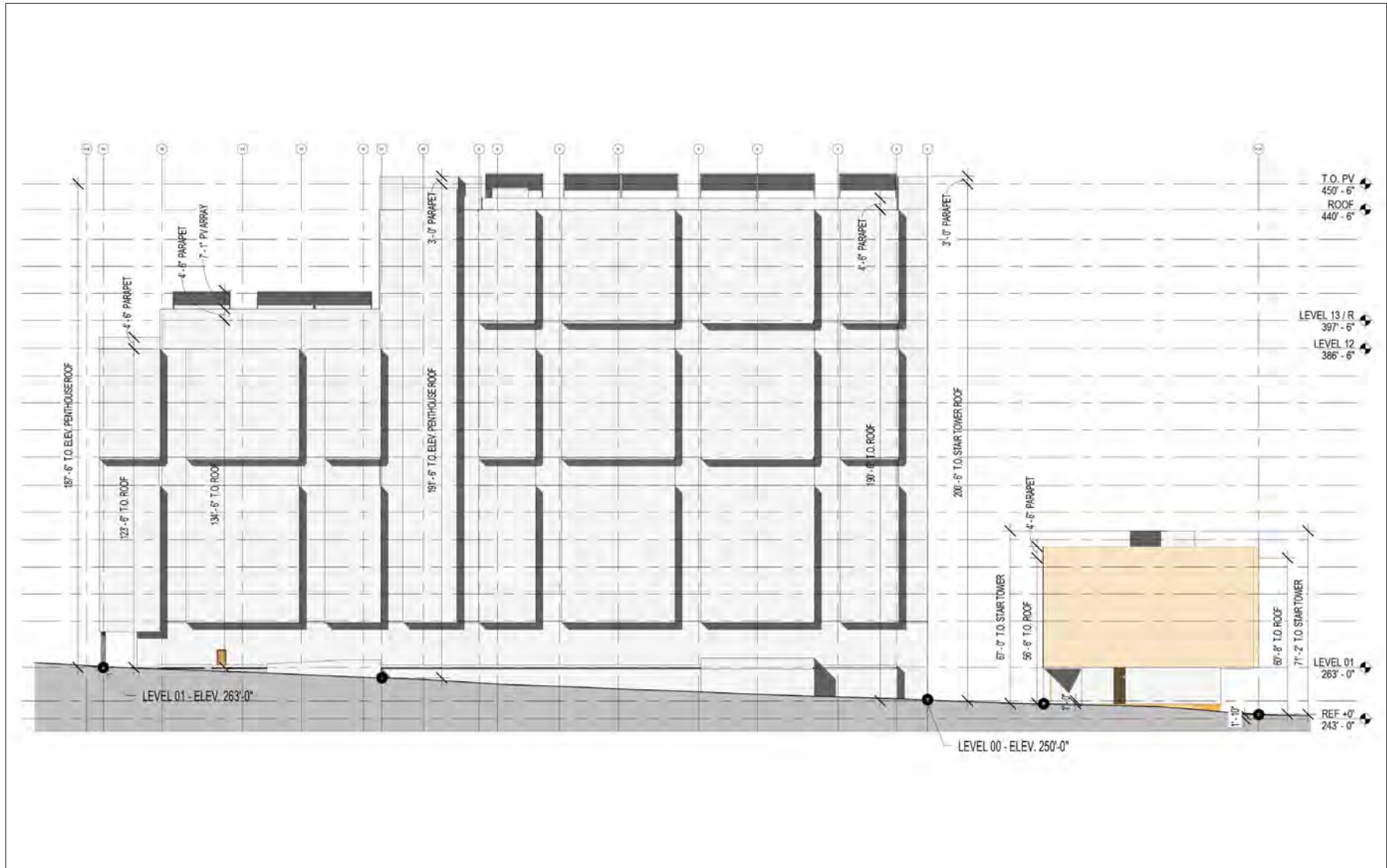
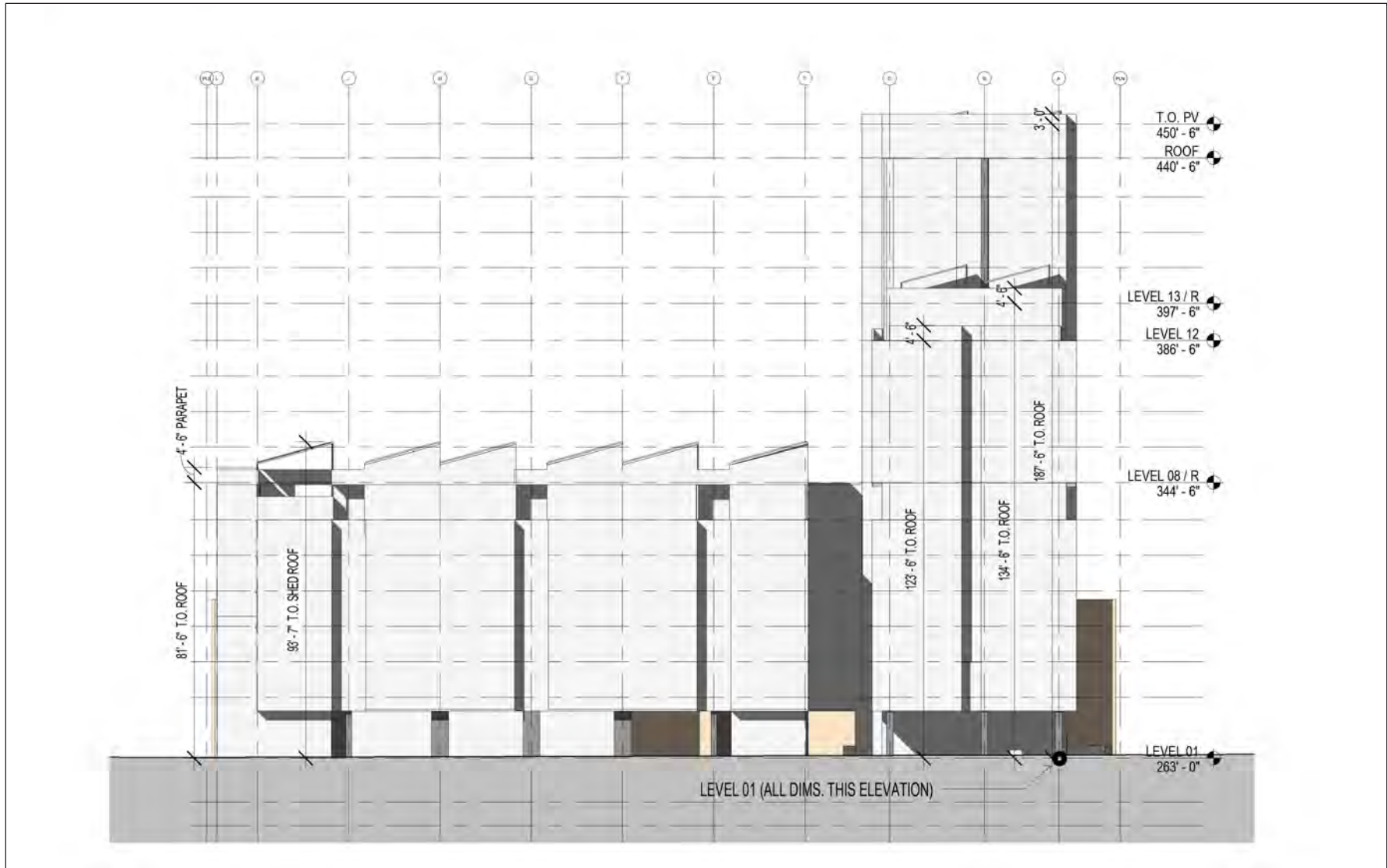


Figure 3-15
Housing Project #2 Site and Landscape Plan



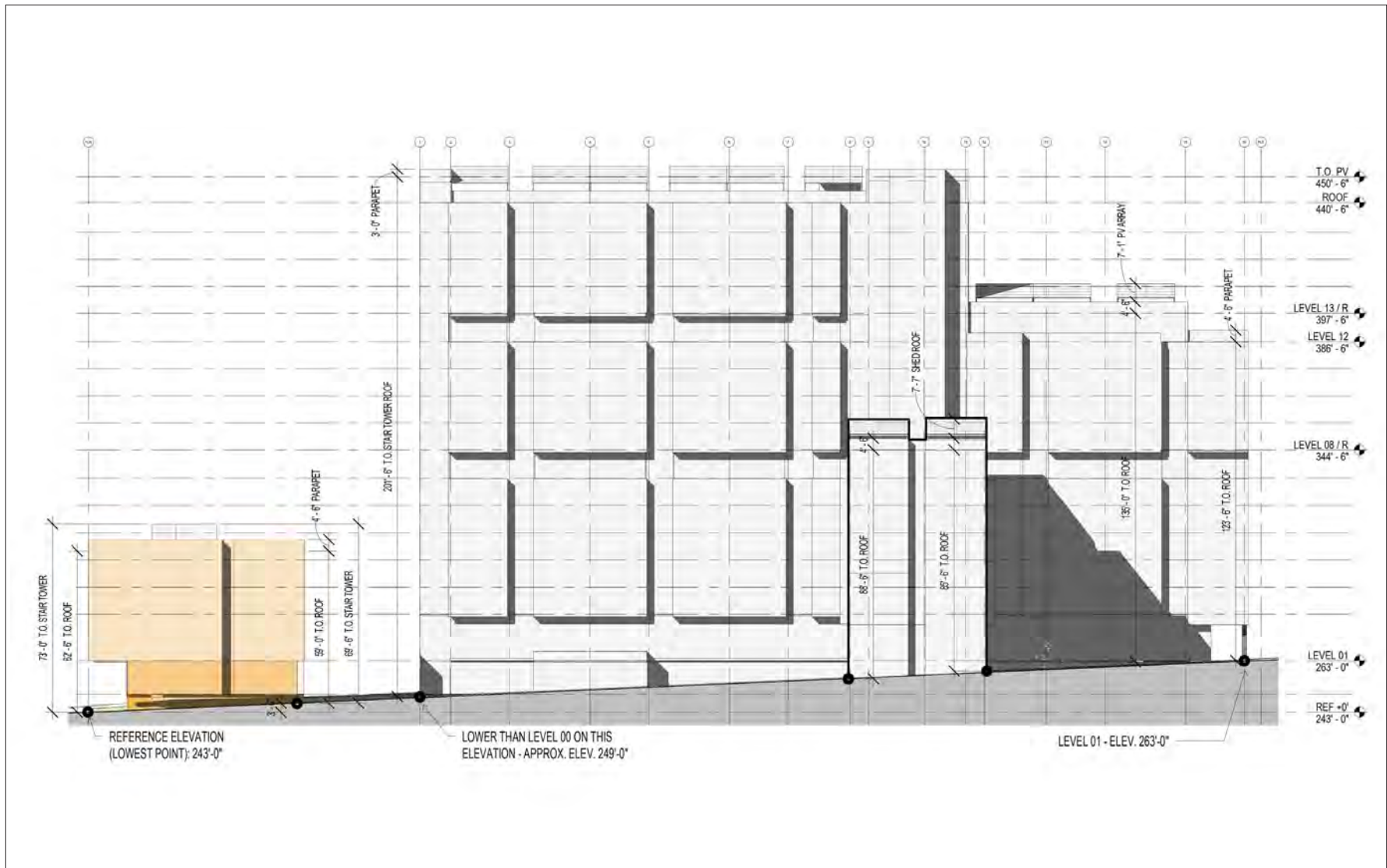
Source: Leddy Maytum Stacy Architects, 2020.

Figure 3-16
Housing Project #2 North Building Height and Elevation Diagram



Source: Leddy Maytum Stacy Architects, 2020.

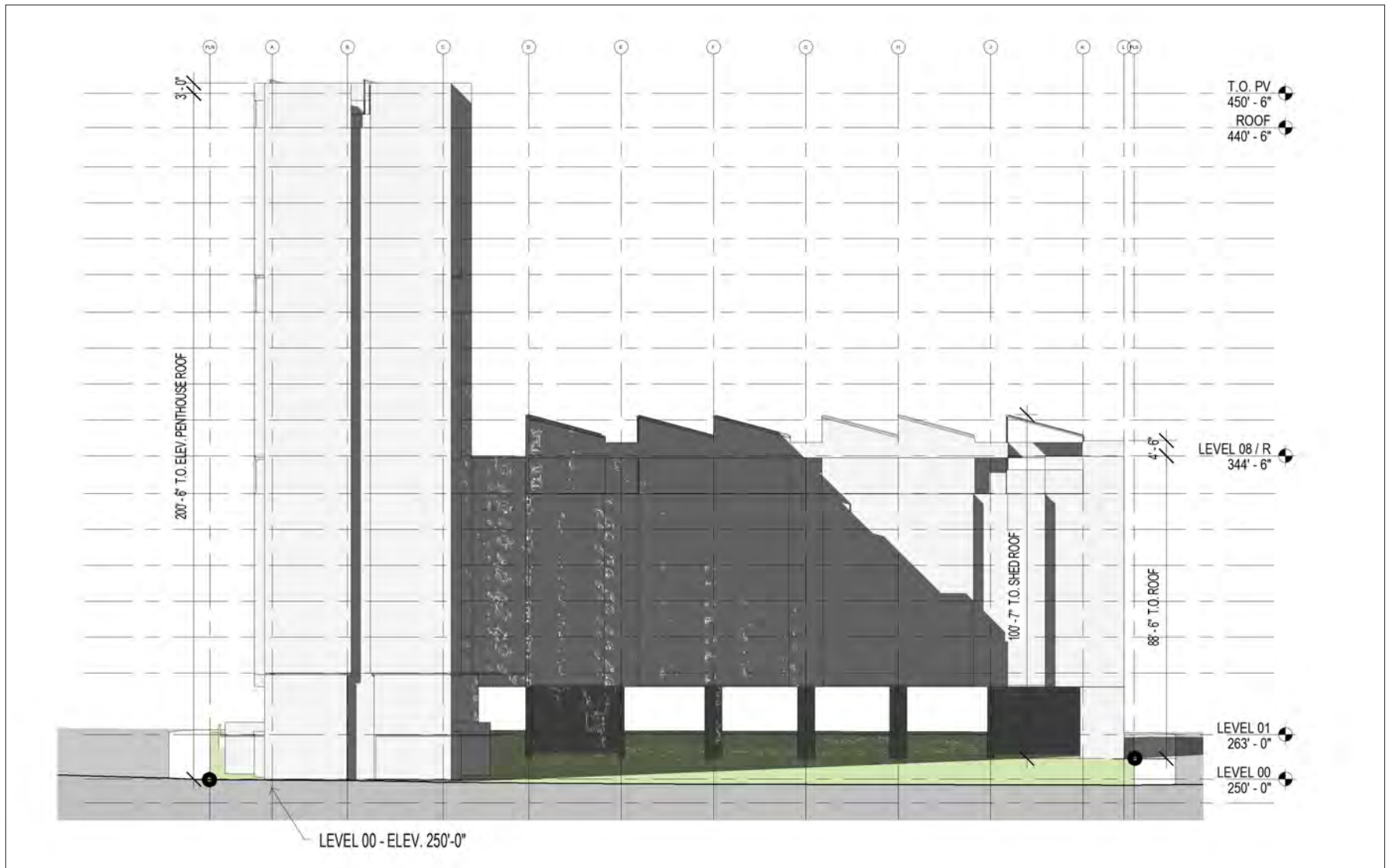
Figure 3-17
Housing Project #2 East Building Height and Elevation Diagram



Source: Leddy Maytum Stacy Architects, 2020.

Figure 3-18

Housing Project #2 South Building Height and Elevation Diagram



Source: Leddy Maytum Stacy Architects, 2020.

Figure 3-19
Housing Project #2 West Building Height and Elevation Diagram

Streetscape and Landscape

The proposed Housing Project #2 would be set back about 13 feet from the sidewalk along Haste Street, about 20 feet from the sidewalk along Bowditch Street, and about 3 feet from the sidewalk along Dwight Way. The affordable and supportive housing building would be set back 2 to 3 feet from the sidewalks along Dwight Way and have a zero-foot setback along Haste Street.

The proposed Housing Project #2 would install streetscape features and sidewalks along all four sides of the project site perimeter, including features such as trees, planters, artificial turf, benches, and bicycle racks as well as street parking payment kiosks and trash receptacles. The site paving materials include concrete, unit pavers, and decomposed granite (pervious). A limited amount of new asphalt would be installed for the pedestrian-only path across the glade. Up to 18 trees would be planted along the perimeter. The proposed landscaping would be consistent with the surrounding landscape and would include native and/or adaptive and drought-resistant plant materials grouped by hydrozones (i.e., areas with similar water use). Most plantings would be drought-tolerant grasses, shrubs, and trees that, once established, are adapted to a dry summer and intermittent rain in the winter season.

Lighting and Glare

The source, intensity, and type of exterior lighting for the project site would be typical for user orientation and safety needs, including the open space component. All on-site lighting would be low-level illumination, downward facing, and shielded to reduce light spillover or glare. Interior lighting would include varied lighting design appropriate for the different spaces and in accordance with all applicable codes and standards, including energy codes and performance standards. All exterior surface and aboveground mounted fixtures would be sympathetic and complementary to the overall architectural theme. Fixtures would be selected to minimize effects of light pollution, with full cutoff and low-glare light distribution, and fixtures beneath canopies and soffits would conceal upward light spill. Exterior lighting would be incorporated into entrances, pathways, and terraces, as appropriate, to create a safe and secure nighttime environment and minimize light pollution. Exterior lighting would be controlled by an astronomical time clock and photocells, have dimming capability, and meet egress light levels where required by code. Street lighting in sidewalks around the project would conform to City of Berkeley and UC Berkeley standards.

Residential: Student Housing

The proposed Housing Project #2 would involve construction of apartments for students in a combination of four-bedroom, three-bedroom, and smaller studio-style apartments, also referred to as micro units. There would also be a small number of two-bedroom apartments for faculty/staff. Many student rooms would include shared bedrooms with two beds each, and a number of rooms would be dedicated to students serving as resident assistants. Eight beds would be available for UC Berkeley staff/residential faculty. In total, 166 units with up to 1,187 beds would be provided. One new resident per bed is assumed; therefore, this project would accommodate 1,179 students and 8 staff/residential faculty on the site. Each apartment would have a kitchen and a bathroom for at least every two bedrooms.

Residential amenities would be provided for residents only and include common areas on the residential floors of the proposed student housing building, such as social and study lounges, video/call booths, and shared laundry rooms. Other common areas would include a lobby and reception area with housing offices for private use by residents. There is no vehicular parking proposed for the residential component.

Campus Life

The proposed student housing also includes campus life facilities throughout the building. Campus life facilities would include a game room, fitness room, theater space, recording and music practice studio, yoga, dance, and meditation room, academic center, communal kitchen and maker space, which will primarily be located on the seventh story of the south wing. The proposed meeting and conferencing rooms and associated restrooms would be on the first two floors of the south wing.

Public and Non–UC Berkeley Uses

Public Market

A public market would be on the northeastern corner of the student housing building, at the intersection of Bowditch Street and Haste Street. It would be accessible from the ground floor, which is the second story of the student housing building, because the project site slopes downwards to the west. The public market would provide light food and beverage service, outdoor seating, and include back-of-house preparation and a storage area. The market would be for public use and would be operated by UC Berkeley or a vendor.

Public Open Space

The proposed project would be designed to preserve 67 percent of the site, approximately 82,000 square feet (1.8 acres), for continued use as public open space. Landscaping on-site would incorporate native and drought-tolerant species to encourage sustainable water use. As many as possible of the mature and healthy existing trees would be preserved. A landscaped forecourt would exist on the eastern side of the affordable and supportive housing building. Detention planters and trees would be located throughout the site. An approximately 0.5-acre, oval-shaped, multiuse raised lawn area would be in the center of the site and surrounded by paved walkways. Underneath the breezeway of the south wing of the student housing building, to the east of the glade, would be an active, multiuse community space with displays and a small amphitheater. The porch would be raised to offer views into the central glade. On the eastern side of the project site would be a plaza and café terrace with outdoor seating adjacent to the proposed public market. In addition, gardens would be located on the southeastern corner of the project site, with a grove located between the market terrace and gardens. Gardens would consist of a matrix of native and healing plant gardens with native and regional groundcovers, shrubs, and grasses. The proposed Housing Project #2 could also include a commemoration program for People's Park as part of the open space component, which could include, but is not limited to a pathway with commemorative plaques or temporary/rotating art exhibits, or another active program that suits the site.

Affordable and Supportive Housing

The separate affordable and supportive housing building would provide permanent housing with on-site services and apartments for lower-income or formerly homeless individuals. The affordable and supportive housing would be developed and managed by a nonprofit organization, Resources for Community Development (RCD), partnering with UC Berkeley. The affordable and supportive housing would include a combination of studio units and/or one- and two-bedroom apartments, each with a private bathroom and kitchen, for a total of 125 apartments. The majority of apartments would be on floors two through five of the building.

The ground floor of the affordable and supportive housing building would include a lobby, mail area, and seating area, property management offices, residential services offices, common room, communal kitchen, shared laundry room, academic nexus and clinic, maintenance shop, janitorial and utility facilities, and a small number of residential units. Residential services offices and support facilities would include office space for an RCD coordinator, licensed social worker supervisor, three case managers, and two interns.

Circulation

Vehicle Access and Parking

The proposed project would not alter existing roadway patterns around the project site. The student housing building would not include parking for residents or employees. Temporary street parking would remain available along Haste Street, Bowditch Street, and Dwight Way, with a pullover lane in front of the north side of the student housing building on Haste Street.

The affordable and supportive housing building would not include on-site parking for residents; however, it would include 11 staff parking spaces. These would be included as parallel parking spaces along a one-way drive lane that would connect Haste Street and Dwight Way along the western side of the building.

Bicycle and Pedestrian Access

The proposed Housing Project #2 site would be accessible to pedestrians from Haste Street, Bowditch Street, Dwight Way, and a new drive lane along the western edge of the project side. Pedestrians would be able to walk across the green spaces along Bowditch Street, cross under the south wing of the student housing building, and walk across open space in the central portion of the project site; the open space would also be accessible from walkways crossing the site between Haste Street and Dwight Way.

The student housing building would include a secured area for bicycle parking for residents and employees, with capacity for 129 bicycles and a bicycle repair station. The main pedestrian access to the building would be located off Haste Street.

The affordable and supportive housing would include 62 bicycle parking spaces for residents and employees in a secure internal bicycle storage room on the ground floor. Pedestrian access into the building would be primarily through entrances off Haste Street and on the eastern side. An additional entrance for employees would be located off Dwight Way, entering the office space on the ground floor.

Utilities and Service Connections

Potable Water Supply

Like proposed Housing Project #1, water for proposed Housing Project #2 would be supplied to the site by EBMUD. Water supply for potable and fire water on the site would connect to existing water mains around the project site, which include six-inch water lines under Haste Street and Dwight Way and a four-inch water main under Bowditch Street. To achieve the required fire water supply to the proposed project, the water main in Haste Street would likely need to be upsized and connected to the existing, larger-diameter mains along Telegraph Avenue at Haste Street, Channing Way at Bowditch Street, or College Avenue at Haste Street.

Sanitary Sewer

The proposed project would connect to existing sewer mains surrounding the project site maintained by the City of Berkeley, which include a 10-inch sewer main underneath Haste Street and Bowditch Street, and a 14-inch existing sewer main underneath Dwight Way.

Stormwater

The proposed Housing Project #2 would result in approximately 60,000 square feet of pervious (landscaped) surfaces and approximately 62,000 square feet of impervious surfaces, including buildings and hardscapes. This represents a net increase in impervious surfaces.

Like Housing Project #1, this project could be part of a UC Berkeley campuswide stormwater credit system, developed in partnership with the RWQCB, that would allow major high-impact improvements to be implemented rather than incremental small, lower-impact projects. If not part of a future stormwater credit system, project stormwater would be treated on-site and directed to the City of Berkeley's storm drain system. The proposed buildings would be served by two 12-inch storm drain laterals connecting to an existing 36-inch storm drain along Dwight Way and Bowditch Street and an existing 10-inch storm drain in Haste Street. The proposed Housing Project #2 would include post-construction stormwater controls necessary to meet requirements in the municipal regional stormwater permit. Roof drains and overflow drains would be provided pursuant to code. Stormwater controls would include bioretention facilities, vegetated roof trays, landscaped areas, and permeable pavements. Swales along the sides of a centrally located berm would capture runoff and drain into a detention area at its base. Additional green infrastructure, including flow-through planters and stormwater catchment areas, would help capture roof runoff. The project is targeting to achieve at least one point under LEED 4.1 Rainwater Management credit, which requires runoff from pollutant-generating impervious surfaces to be treated with low-impact development practices, and that a minimum of 80 percent of regional or local rainfall events are retained.

Electricity

The proposed Housing Project #2 would be all electric, with no fossil fuel use except for an emergency generator, which would be diesel fueled. Electricity would be provided through East Bay Community Energy,

with infrastructure maintained by PG&E. The proposed project would connect to existing electrical infrastructure servicing the surrounding area. Existing overhead power lines are located along Haste Street, Bowditch Street, and Dwight Way surrounding the Housing Project #2 site. Existing underground telecommunications facilities are located along Bowditch Street just east of the Housing Project #2 site. In addition, 12,000 square feet of solar PV panels would be located on the roof of the proposed student housing building, and PV panels would be provided on the proposed affordable and supportive housing building as well, which would offset energy demands from service providers.

Telecommunications

Telecommunications services would be provided by existing utility providers in the area, such as AT&T, Comcast, and/or Sonic. The proposed project would include appropriate on-site infrastructure to connect to the existing electrical and telecommunication systems.

Sustainability

The proposed Housing Project #2 has several sustainable project features. These include the provision of solar PV panels on the roofs of both the student housing and the affordable and supportive housing buildings. Lighting controls would be incorporated to reduce energy usage and interface with daylight whenever possible; lighting in many areas would be dimmable with automatic dimming or shut-off when unoccupied. Luminaires would be LED light sources in all project areas; incandescent, fluorescent, and metal halide sources would not be used unless specifically required by a program. UC Berkeley's energy policies require housing projects designed in 2020 and later to have no on-site fossil fuel consumption (with minor exceptions) and to be designed with an EUI target of 31 kBtu per square foot per year maximum prior to inclusion of any on-site renewable energy. The design would be all electric (except the emergency generator, which would be diesel-fueled) and incorporate water-efficiency measures such as low-flow toilets, sinks, and showers and efficient laundry washing machines to meet a 36 percent reduction goal for potable water consumption. All landscaping would include native and/or adaptive and drought-resistant plant materials with similar water use and adapted to a dry summer and intermittent rain in the winter season. The proposed project would install grey-water piping for future use. Housing Project #2 would follow best practices to facilitate sorting waste to contribute to UC Berkeley's campuswide goal of 90 percent waste diversion from landfills. These sustainability measures would apply to the student housing building, which would pursue design credits for LEED Gold certification and achieve a 20 percent energy use reduction from the 2019 California Building Code Building and Energy Efficiency Standards per University of California policy. The affordable and supportive housing building would meet the California Building Energy Efficiency Standards. In addition, all concrete areas would be differentiated by colors and texture with the goal of minimizing reflectivity and heat-island effect.

Site Preparation and Construction

The proposed Housing Project #2 would demolish all existing structures on-site, including the public restroom, basketball courts, and stage. The site would be reconfigured and trees affected by building construction would be removed, but an effort would be made to preserve significant trees in good condition in place, where possible. The project site has the potential to preserve 21 trees, relocate up to 24

trees, and remove a minimum of 30 trees depending on how many are successfully transplanted, if transplanting is a viable option. Trees to be preserved are primarily along the frontage and on the southeastern portion of the project site; however, other trees throughout may also be preserved when possible. Debris hauled off-site would include approximately 11,000 cubic yards of soil, and 1,700 cubic yards of soil would be imported for planting. Typical equipment to be used for demolition, grading, and trenching could include backhoes, excavators, concrete saws, graders, dozers, scrapers, and water trucks.

The building construction phase(s) would occur over approximately 18 months and would consist of the total building area and hardscape (e.g., driveways, sidewalks, curb, gutters). See Table 3-7, Housing Project #2 Proposed Development, for building details. Typical equipment to be used for building construction could include forklifts, backhoes, cranes, loaders, aerial lifts, generators, welders, cement mixers, rollers, pavers, and air compressors. Pile driving is proposed during the construction phase for the proposed student housing building.

During demolition and construction, vehicles, equipment, and materials would be staged and stored on the project site, when practical. The construction site and staging areas would be clearly marked, and construction fencing would be installed to prevent disturbance and safety hazards. A combination of on- and off-site parking facilities for construction workers would be identified during the demolition, grading, and construction phases.

3.6 REQUIRED PERMITS AND APPROVALS

This document serves three primary purposes. First, the Regents will use this EIR to evaluate the environmental implications of approving the proposed LRDP Update and Housing Projects #1 and #2. Second, if this EIR is certified and the proposed LRDP Update is approved, this EIR will be used to focus future environmental review of subsequent development projects implementing the LRDP Update on the UC Berkeley campus. Finally, this document may be used as a source of information by responsible, trustee, or federal agencies with permitting or approval authority over projects or portions of projects implementing the proposed LRDP Update.

No other agency approval, other than the Regents, is required for the proposed LRDP Update and Housing Projects #1 and #2. However, under limited circumstances as potential future developments are proposed that are not evaluated at a project level in this EIR, other permits and approvals may be needed depending on the characteristics of the potential future development. A list of agencies that may be required to issue permits or approve certain aspects of a particular potential future development is provided below. A detailed description of these permits is provided in the regulatory framework sections presented in Chapter 5, Environmental Analysis, of this Draft EIR.

- **U.S. Army Corps of Engineers (federal agency).** Permit related to discharge of fill material to waters of the United States (if needed).
- **U.S. Fish and Wildlife Service (federal agency).** Compliance with the federal Endangered Species Act for potential take of listed species (if needed).

3. PROJECT DESCRIPTION

- **California Department of Fish and Wildlife (responsible and trustee agency).** Compliance with the California Endangered Species Act for potential take of state-listed species (if needed); permit for any work in a river, stream, or lake or its tributaries.
- **California Department of Transportation (Caltrans) (responsible agency).** Permit to provide temporary access for construction within Caltrans rights-of-way.
- **San Francisco Bay Regional Water Quality Control Board (responsible agency).** Inspections and enforcement related to waste discharge requirements for impacts on waters of the state and stormwater pollution prevention plan for construction/operation.
- **State Water Resources Control Board (responsible agency).** Coverage under nontraditional small municipal separate storm sewer system (MS4), general construction, and industrial stormwater permits.
- **Bay Area Air Quality Management District (BAAQMD) (responsible agency).** Authority to construct and permit to operate for any stationary sources (e.g., generators and fume hoods) of air contaminant emissions. BAAQMD would also process other permits required from the California Air Resources Board and the Environmental Protection Agency.
- **City of Berkeley (responsible agency).** Potential approval of roadway, bicycle path, sidewalk improvements within city right-of-way.

With respect to the near-term Housing Projects #1 and #2, the agencies listed below with potential permit authority over the projects, or elements thereof, will have the opportunity to review this document during the public and agency review period, and will use this information when considering the issuance of any permits required. The following agencies may be required to issue permits or approve certain aspects of the two housing developments.

- **Bay Area Air Quality Management District (responsible agency).** Authority to construct and permit to operate for any stationary sources (e.g., generators and fume hoods) of air contaminant emissions.
- **San Francisco Bay Regional Water Quality Control Board (responsible agency).** Stormwater pollution prevention plan for construction/operation.
- **City of Berkeley (responsible agency).** Potential approval of sidewalk and street and traffic-control improvements on the perimeter of each housing project site.

4. Acronyms and Abbreviations

The following is a complete list of the acronyms and abbreviations referenced in this Draft EIR. While the name will be spelled out the first time it is used in each chapter, this chapter provides a quick reference for common acronyms used throughout the document.

Acronym/Abbreviation	Definition
AAALAC	Association for Assessment and Accreditation of Laboratory Animal Care
AAQS	ambient air quality standard
AASHE	Advancement of Sustainability in Higher Education
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACE	affordable clean energy
ACFD	Alameda County Fire Department
ACUC	Animal Care and Use Committee
ADA	Americans with Disabilities Act
ADT	average daily trips
AF	acre-feet
AFY	acre-feet per year
AHJ	authority having jurisdiction
ALS	advanced light source
APN	Assessor's Parcel Number
AQMP	air quality management plan
ASUC	Associated Students of the University of California
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BAU	business as usual
BCM	basic control measure
BERD	Built Environment Resources Directory
BESS	battery energy storage system
BFD	Berkeley Fire Department
BFE	base flood elevation
bgs	below ground surface
BMC	Berkeley Municipal Code
BMP	best management practice
BPD	Berkeley Police Department
BUSD	Berkeley Unified School District
C	carbon
CAFE	corporate average fuel economy

4. ACRONYMS AND ABBREVIATIONS

CalARP	California Accidental Release Program
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CAP	climate action plan
CAPCOA	California Air Pollution Control Officers Association
CAR	climate action reserve
CARB	California Air Resources Board
CBC	California Building Code
CBP	continuing best practice
CCE	Community Choice Energy
CCR	California Code of Regulations
CDC	California Department of Conservation
CDFW	California Department of Fish and Wildlife
CE	City Environs Properties
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability System
CESA	California Endangered Species Act
CFC	California Fire Code
CFR	Code of Federal Regulations
CGS	California Geological Survey
CHL	California Historic Landmark
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CHRSC	California Historic Resources Status Code
CII	commercial, industrial, and institutional
CIMP	campus infrastructure master plan
CIP	capital improvement program
CK	Clark Kerr Campus
CLEB	Committee for Laboratory and Environmental Biosafety
CMP	creek management plan
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNI	carbon neutrality Initiative
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
COPD	chronic obstructive pulmonary disease
CP	Campus Park
CPC	California Plumbing Code
CPUC	California Public Utilities Code

CREC	controlled recognized environmental conditions
CRPR	California Rare Plant Rank
CSC	Capital Strategies Communications
CTC	County Transportation Commission
CUPA	Certified Unified Program Agency
CVP	Central Valley Project
CWA	Clean Water Act
CWPP	Clean Water Protection Plan
DAC	Disability Access and Compliance
dB	decibel
dBA	A-weighted decibel
dbh	diameter at breast height
DEM	digital elevation model
DGR	dangerous goods regulations
DHS	United States Department of Homeland Security
DLE	dry low emission
DOE	Department of Energy
DOT	Department of Transportation
DPF	diesel particulate filters
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
DURT	designated urgent response team
DWR	Department of Water Resources
EBCE	East Bay Community Energy
EBMUD	East Bay Municipal Utilities District
EBOM	existing buildings operations and maintenance
EBRPD	East Bay Regional Park District
ECP	erosion and sediment control plan
EH&S	Office of Environment, Health & Safety
EIR	environmental impact report
ELS	Elbasani, Logan and Severin
EMS	emergency medical services
EMT	emergency medical technician
EO	executive order
EOC	emergency operations center
EOP	emergency operation plan
EPCA	Energy Policy and Conservation Act
EPCRA	Emergency Planning and Community Right-to-Know Act
EPEAT	Electronic Products Environmental Assessment Tool
EPS	expanded polystyrene
ESA	environmental site assessment/Endangered Species Act
ESP	electric service providers
EUI	energy use intensity
EV	electric vehicle

4. ACRONYMS AND ABBREVIATIONS

FAA	Federal Aviation Administration
FAR	floor area ratio
FCE	full capture system equivalency
FCS	full capture system
FEMA	Federal Emergency Management Agency
FHSZ	fire hazard severity zone
FHWA	Federal Highway Administration
FOCUS	MTC/ABAG regional effort
FOG	fat, oils, and grease
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GHG	greenhouse gas
GIS	geospatial/geographic information system
GSA	groundwater sustainability agency
GSF	gross square foot
GSP	groundwater sustainability plan
GWP	global warming potential
HABS	historic American buildings survey
HCD	California Department of Housing and Community Development
HCP	habitat conservation plan
HDPE	High-density polyethylene
HE	Hill Campus East
HEF	Hills Emergency Forum
HMBP	hazardous materials business plan
HMF	hazardous materials facility
HRA	health risk assessment
HREC	historical recognized environmental condition
HRI	historic resources inventory
HVAC	heating, ventilation, and air conditioning
HW	Hill Campus West
HWHF	hazardous waste handling facility
IA	implementing agreement
IACUC	institutional animal care and use committee
IATA	International Air Transport Association
ICS	incident command system
IES	Illuminating Engineering Society
IIPP	Illness and Injury Prevention Program
IPCC	Intergovernmental Panel on Climate Change
IRAP	Institutional Research and Academic Planning
JPA	joint powers authority
LBNL	Lawrence Berkeley National Laboratory
LBP	lead-based paint
LCFS	low carbon fuel standards
LEA	local enforcement agency

LEED	Leadership in Energy and Environmental Design
LEV	low-emission vehicle
LHMP	local hazard mitigation plan
LID	low-impact development
LRA	local responsibility area
LRDP	long range development plan
LREP	long range enrollment plan
LUST	leaking underground storage tank
M	(earthquake) magnitude
MBTA	Migratory Bird Treaty Act
MEIR	maximum exposed individual resident
MEIW	maximum exposed individual worker
MGD	millions of gallons per day
MLD	most likely descendant
MMRP	mitigation monitoring and reporting program
MMTCO ₂ e	million metric tons of carbon dioxide equivalent
MPG	miles per gallon
MRP	material requirements planning
MS4S	municipal separate storm sewer systems
msl	mean sea level
MSRI	Mathematical Science and Research Institute
MT	metric tons
MTC	Metropolitan Transportation Commission
MW	megawatt
MWEL	Model Water Efficient Landscape Ordinance
NACTO	National Association of City Transportation Officials
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NEC	no exposure coverage
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NIH	National Institute of Health
NIMS	National Incident Management System
NIR	nonionizing radiation
NO	nitric oxide
NO ₂	nitrogen dioxide
NOI	notice of intent
NOP	notice of preparation
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	New Source Review
O ₃	ozone

4. ACRONYMS AND ABBREVIATIONS

ODS	ozone-depleting substance
OEHHHA	Office of Environmental Health Hazard Assessment
OEM	Office of Emergency Management
OES	Office of Emergency Services
OPR	Office of Planning and Research
OSCAR	open space, conservation, and recreation
OSHA	Occupational Safety and Health Administration
OUSD	Oakland Unified School District
Pb	lead
PCB	polychlorinated biphenyl
PDA	priority development area
PG&E	Pacific Gas and Electric Company
PHEV	plug-in hybrid electric vehicles
PIPES	pipeline inspection, enforcement, and protection
PLU	Priority Land Use
PM ₁₀	coarse inhalable particulate matter
PM _{2.5}	fine inhalable particulate matter
PMI	point of maximum impact
PPV	peak particle velocity
PRC	Public Resources Code
psig	pounds per square inch
PSPS	public safety power shutoff
PV	photovoltaic
PVC	polyvinyl chloride
RCD	Resources for Community Development
RCNM	roadway construction noise model
RCP	regional conservation plan
RCRA	Resource Conservation and Recovery Act
REAP	rain event action plan
REC	recognized environmental condition
RFA	RCRA facility assessment
RHB	Radiologic Health Branch
RMS	root mean square
ROG	reactive organic gas
RPP	residential permit program
RPS	Renewables Portfolio Standard
RSIS	Radiation Safety Information System
RSSP	regional safe school program
RTAC	regional transportation authority committee
RTP	regional transportation plan
RWQCB	Regional Water Quality Control Board
S	sulfur
SAB	State Allocation Board
SABRC	State Agency Buy Recycled Campaign

SAFE	Safer Affordable Fuel Efficient
SB	Senate Bill
SCMP	Strawberry Creek Management Plan
SCEQC	Strawberry Creek Environmental Quality Committee
SCS	sustainable communities strategy
SDS	safety data sheets
SEMS	Standardized Emergency Management System
SF	square foot
SFHA	special flood hazard area
SGMA	Sustainable Groundwater Management Act
SHS	state highway system
SMARTS	Stormwater Multiple Application and Report Tracking System
SNAC	Advisory Council on Student Neighbor Relations
SO ₂	sulfur dioxide
SOV	single-occupant vehicle
SO _x	sulfur oxides
SRA	State responsibility area
SRC	seismic review committee
SSC	species of special concern
SSL	Space Science Laboratory
SSM	seismic safety and modernization
SSMP	sewer system management plan
SSO	sanitary sewer overflow
STARS	Sustainability Tracking, Assessment, and Rating System
STC	sound transmission class
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TCR	tribal cultural resources
TDM	transportation demand management
TDS	total dissolved solids
TISG	transportation impact study guide
TMD	Toxics Management Division
TMDL	total maximum daily load
TNC	transportation network company
TPA	transit priority area
TPA	Transportation Planning Authority
tpy	tons per year
TRU	transport refrigeration units
TSS	total suspended solids
UC	University of California
UCMP	University of California Museum of Paleontology
UCOP	University of California Office of the President
UCPD	University of California Police Department

4. ACRONYMS AND ABBREVIATIONS

UHS	University Health Services
USACE	U.S. Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGBC	U.S. Green Building Council
USS	utilities and service systems
UST	underground storage tank
UTM	Universal Transverse Mercator
UWMP	urban water management plan
VCP	vitified clay pipe
VHFHSZ	very high fire hazard severity zone
VMT	vehicle miles traveled
WDR	waste discharge requirements
WGCEP	Working Group on California Earthquake Probabilities
WSA	water service agreement
WSMP	water supply management program
WSP	workplace safety program
WTP	water treatment plant
WUI	wildland-urban interface
WVFMP	wildland vegetative fuel management plan
WWTP	wastewater treatment plant
ZEV	zero-emission vehicle
ZWRC	Zero Waste Research Center

5. Environmental Analysis

This chapter describes the organization of this Draft Environmental Impact Report (EIR) and the assumptions and methodology of the impact analysis and the cumulative impact setting. There are 18 subchapters that make up this chapter and evaluate the direct, indirect, and cumulative environmental impacts of the proposed project.

CHAPTER ORGANIZATION

In accordance with Appendix G, Environmental Checklist, of the California Environmental Quality Act (CEQA) Guidelines, the potential environmental effects of the proposed project are analyzed for potential significant impacts in 18 environmental issue areas, which are numbered Chapters 5.1 through 5.18 and use the listed abbreviations.

- | | |
|--|---------------------------------------|
| ▪ AES: Aesthetics | ▪ LUP: Land Use and Planning |
| ▪ AIR: Air Quality | ▪ NOI: Noise |
| ▪ BIO: Biological Resources | ▪ POP: Population and Housing |
| ▪ CUL: Cultural Resources | ▪ PS: Public Services |
| ▪ ENE: Energy | ▪ REC: Parks and Recreation |
| ▪ GEO: Geology and Soils | ▪ TRAN: Transportation |
| ▪ GHG: Greenhouse Gas Emissions | ▪ TCR: Tribal Cultural Resources |
| ▪ HAZ: Hazards and Hazardous Materials | ▪ UTIL: Utilities and Service Systems |
| ▪ HYD: Hydrology and Water Quality | ▪ WF: Wildfire |

Each subchapter generally uses the same organization and consists of the following sections.

- **Environmental Setting.** This section is made up of the Regulatory Framework section, which describes which federal, State, University of California (UC) System/UC Berkeley, and/or local regulations are applicable to the proposed project, and the Existing Conditions section, which describes current conditions regarding the environmental issue area reviewed.
- **Standards of Significance.** This section describes how an impact is judged to be significant in this Draft EIR. These standards are based primarily on the CEQA Guidelines and may reflect established health standards, ecological tolerance standards, public service capacity standards, or guidelines established by agencies or experts. For each impact identified, a level of significance is determined using the following classifications:
 - *No impact* describes the circumstances where there is no adverse effect on the environment.
 - *Less-than-significant (LTS)* impacts include effects that are noticeable, but do not exceed established or defined thresholds or are mitigated below such thresholds.
 - *Significant (S)* impacts include a description of the circumstances where an established or defined threshold would be exceeded.
 - *Significant and unavoidable (SU).* For each impact identified as being significant, the EIR identifies applicable continuing best practices (CBPs) and/or feasible mitigation measures to reduce,

eliminate, or avoid the adverse effect. If the CBPs and/or feasible mitigation measures would reduce the impact to a less-than-significant level successfully, this is stated in the EIR. However, SU impacts are described where CBPs and/or feasible mitigation measures would not diminish these effects to less-than-significant levels.

- **Impact Discussion.** This section assesses potential environmental impacts (direct and indirect) and explains why impacts were found to be significant or less than significant prior to mitigation. This section also lists applicable regulations, and any applicable UC Berkeley CBPs, which are considered to be implemented as part of the proposed project. As appropriate, impacts are first addressed for the proposed LRDP Update, followed by Housing Project #1 and Housing Project #2, clearly denoted with separate headings. This section also includes a discussion of cumulative impacts related to the proposed project. Impacts and mitigation measures, as well as applicable CBPs, are numbered consecutively within each topical analysis and begin with an acronym or abbreviated reference to the impact section. Some mitigation measures and CBPs are appropriate for more than one environmental topic area and are cross-referenced accordingly.

EVALUATION METHODOLOGY

Under CEQA, the decision as to whether an environmental effect should be considered significant is reserved to the discretion of the Regents of the University of California, acting as the lead agency, based on substantial evidence in the record as a whole, including views held by members of the public. An ironclad definition of significant effect is not always possible because the significance of an activity may vary based on the setting. The analysis in the Draft EIR is based on scientific and factual data that has been reviewed by the lead agency and represents the lead agency's independent judgment and conclusions.¹

PROPOSED PROJECT

As discussed in Chapter 3, Project Description, of the Draft EIR, the proposed project includes the long-range planning document, the LRDP Update, and two near-term construction-level projects, the Housing Projects #1 and #2. The environmental analysis in this EIR discusses the potential for adverse impacts to occur as a result of the increased buildout potential in the EIR Study Area from implementing the proposed LRDP Update, including the ongoing implementation of existing and/or updated CBPs.

The 2036–37 EIR buildout horizon development potential under the proposed LRDP Update includes the net increase of maximum development potential for the UC Berkeley campus, which includes Housing Projects #1 and #2. Tables 3-1, Proposed LRDP Update Buildout Projections; 3-6, Housing Project #1 Proposed Development; and 3-7, Housing Project #2 Proposed Development, in Chapter 3, Project Description, of this Draft EIR, respectively show the projected new development potential on the UC Berkeley campus and on the two housing sites.

¹ California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15064(b).

Because the proposed project consists of a long-term planning document that is intended to guide future development activities and UC Berkeley actions, it is reasonable to assume that future development would occur incrementally or gradually over the 16-year EIR buildout horizon (e.g., 2021–22 to 2036–37). However, while this assumption describes the long-range nature of the proposed project, it does not prohibit or restrict when development can occur over the horizon period.

CONTINUING BEST PRACTICES

As described in Chapter 3, Project Description, UC Berkeley currently implements continuing best practices or CBPs to ensure environmental impacts that could result from development projects and ongoing UC Berkeley operations are reduced and/or avoided to the greatest extent feasible. CBPs are actions that UC Berkeley will continue to implement through the life of the proposed LRDP Update. CBPs comprise regulations, applicable codes, best management practices, and UC Berkeley’s Campus Design Standards. UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. Campus Design Standards ensure that UC-sponsored construction projects integrate industry best practices, regulations, and code in and around new and existing campus buildings. Implementation of CBPs and the Campus Design Standards are administered and enforced by UC Berkeley’s Building Department, which reviews and inspects all UC Berkeley-sponsored construction and renovation projects and determines whether work complies with the project construction documents.

The CBPs and the Campus Design Standards are provided to UC Berkeley consultants, project sponsors, and design professionals for guidance in preparing construction documents for capital projects. Contracts reference the Campus Design Standards and CBPs, which are included in construction contracts.

The proposed project includes existing and updated CBPs that reflect evolving standards, practices, and current regulations or purely semantic updates. In some cases, some mitigation measures identified as part of the 2005 LRDP EIR are continued as CBPs because UC Berkeley has consistently implemented these measures since 2005² and they are now standard procedure for UC Berkeley projects and daily operations. A comprehensive list of existing and proposed updated CBPs is in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR.

Chapters 5.1 through 5.18 identify existing and updated CBPs relevant to CEQA standards of significance and discuss their effect in avoiding or reducing impacts to the environment from the construction and operation of future development on the UC Berkeley campus. In general, the CBPs aim to reduce vehicle miles traveled (VMT), greenhouse gas emissions, air and water pollutants, energy consumption, water demand, and solid waste generation by promoting infill development; increase opportunities for alternative modes of transportation, pedestrian and bicycle access, and connectivity; protect open space; conserve and protect biological and cultural resources, including historic buildings; require adherence to green building practices; and ensure industry best practices are followed during construction. CBPs aim to avoid

² University of California, Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, 2005, State Clearinghouse Number 2003082131.

hazardous conditions and facilitate a healthy and safe environment for students, faculty, staff, and visitors to UC Berkeley.

In some cases, CBPs may involve temporary physical effects during construction or short-term physical effects during operation that would have the potential to create or contribute to an impact on the environment. For example, some CBPs require activities such as short-term vegetation maintenance during operation or the installation of physical features such as temporary acoustical barriers during construction. These activities and equipment use could involve water and energy consumption, generate noise, and/or create air emissions. In addition, physical features such as temporary construction fencing for biological resource setbacks could have temporary aesthetic impacts. The physical effects associated with any such CBPs incorporated into projects that would implement the proposed LRDP Update are evaluated throughout this Draft EIR, for example in Chapter 5.2, Air Quality; Chapter 5.7, Greenhouse Gas Emissions; Chapter 5.11, Noise; and Chapter 5.17, Utilities and Service Systems. The environmental effects of implementing the construction-phase CBPs would generally be nominal when compared to the overall effects of the operation of future development projects with which they are associated. In addition, implementation of the CBPs would be short term during operation or temporary during construction, and it would be speculative to attempt to quantify their effects when implemented as part of future development projects, including Housing Projects #1 and #2. For example, CBP AIR-2, which requires watering of active construction sites in compliance with the Bay Area Air Quality Management District's basic control measures for fugitive dust, would use a nominal amount of water during the temporary construction period compared to the ongoing operation of a development project. CBP BIO-11, which requires the ongoing maintenance of trees and vegetation as part of UC Berkeley daily operations, would generate short-term noise and emissions from various landscaping equipment that would be speculative to quantify and, therefore, not required (CEQA Guidelines Section 15145, Speculation). As discussed above, the combined effect of CBPs, when implemented as part of construction and operation of future development projects or UC Berkeley daily operations, would be to reduce environmental effects as demonstrated where listed in each environmental topic of this Draft EIR (see Chapters 5.1 through 5.18).

BASELINE

This EIR evaluates the impacts of the proposed project relative to existing conditions, as required by CEQA Guidelines Section 15126.2. The baseline represents the existing conditions on the ground ("physical conditions") at the time that the Notice of Preparation was issued (April 7, 2020). However, some baseline conditions, in particular those related to population, apply 2018 data due to the disruptions created by the current coronavirus disease 2019 (COVID-19) pandemic. The COVID-19 pandemic has introduced a substantial amount of uncertainty in human lives. It has directly affected human behavior, requiring people to shelter in place, implement social/physical distancing, and make other changes to the way they live. Indirectly, it has affected the economy, resulting in reduced consumer spending, business closures, and widespread unemployment. Though some of these trends are considered short term and are expected to reverse, some permanent changes in the ways humans live and behave are likely in the post-pandemic world. As with humans, institutions such as UC Berkeley are expected to make changes in the way they operate. As a result of the pandemic, UC Berkeley may consider operational changes, such as increases in telework and remote/online learning. However, the net effect of the pandemic on the UC Berkeley campus

site development and operations cannot be predicted at this point in time. Accordingly, the impact analysis in this EIR is generally based on the assumption that overall behavior would be similar to conditions prior to the start of the pandemic, because, at present, the medium- or long-term effects of the COVID-19 pandemic are uncertain, and it would be speculative to estimate any potential long-term or permanent changes, and CEQA does not sanction speculation (CEQA Guidelines Section 15145).

As described in Chapter 3, Project Description, and shown in Table 3-1, Proposed LRDP Update Buildout Projections, the baseline, which is the 2018–19 academic year, includes the following existing conditions:

- Residential: 2,028,286 square feet (9,020 beds)
- Academic Life Space: 9,895,901 square feet
- Campus Life Space: 1,934,270 square feet
- Population: 29,932 undergraduate students, 9,776 graduate students, and 15,421 faculty and staff

REGULATORY SETTING

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local land use policies whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is not subject to local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding UC Berkeley properties when it is appropriate and feasible, although UC Berkeley is not bound by those policies and regulations. Therefore, Chapters 5.1 through 5.18 identify the policies and regulations of the cities of Berkeley and Oakland that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including the currently proposed Housing Projects #1 and #2.

PRIORITY DEVELOPMENT AREAS AND TRANSIT PRIORITY AREAS

Plan Bay Area is the San Francisco Bay Area’s Regional Transportation Plan and Sustainable Communities Strategy, prepared by the Association of Bay Area Governments (ABAG) in partnership with the Metropolitan Transportation Commission (MTC), the Bay Area Air Quality Management District, and the Bay Conservation and Development Commission. Plan Bay Area 2040, adopted July 26, 2017, is the current version of the plan. The 2040 Plan Bay Area is a limited and focused update to the 2013 Plan Bay Area, with updated planning assumptions that incorporate key economic, demographic, and financial trends from the last several years. An update to Plan Bay Area with a future time horizon to 2050 is now underway.

Priority development areas (PDAs) and transit priority areas (TPAs) provide an implementing framework for Plan Bay Area. PDAs and TPAs were identified through a regional effort initiated by the ABAG and MTC in 2008 to link planned development with regional land use and transportation planning objectives. PDAs are areas along transportation corridors that are served by public transit that allow opportunities for higher-density development of transit-oriented, infill development in existing communities that are expected to host the majority of future development. TPAs are areas within half a mile of a major transit stop, such as a transit center or rail line. Planning and environmental review requirements are streamlined in

PDAs and TPAs to encourage higher-density, mixed-use development to reduce vehicle miles traveled, energy demand, and greenhouse gas emissions.

Some UC Berkeley properties considered in this Draft EIR are in TPAs and in the Downtown and Southside/Telegraph Avenue PDAs, as identified by ABAG and MTC. In this case, the TPAs would be the Downtown Berkeley Bay Area Rapid Transit (BART) station on Shattuck Avenue between Center Street and Alston Way, and AC Transit bus service on Shattuck Avenue, University Avenue, Telegraph Avenue, College Avenue, and Bancroft Way/Durant Avenue, where specific lines run on at least 15-minute headways during morning and evening peak periods. All of the Campus Park, portions of the Clark Kerr Campus and the West Hill Campus, and the majority of UC Berkeley properties within the City Environs Properties are in a TPA, including both Housing Projects #1 and #2. In addition, UC Berkeley-owned sites within the City Environs Properties to the west of the Campus Park (including Housing Project #1) are within the Downtown Berkeley PDA, and UC Berkeley-owned sites in the City Environs Properties to the south of the Campus Park (including Housing Project #2) as well as the southernmost portion of the Hill Campus West are within the Southside/Telegraph PDA.^{3,4} Figure 5-1, Priority Development Areas and Transit Priority Areas, shows the PDAs and TPAs that overlap with the EIR Study Area.

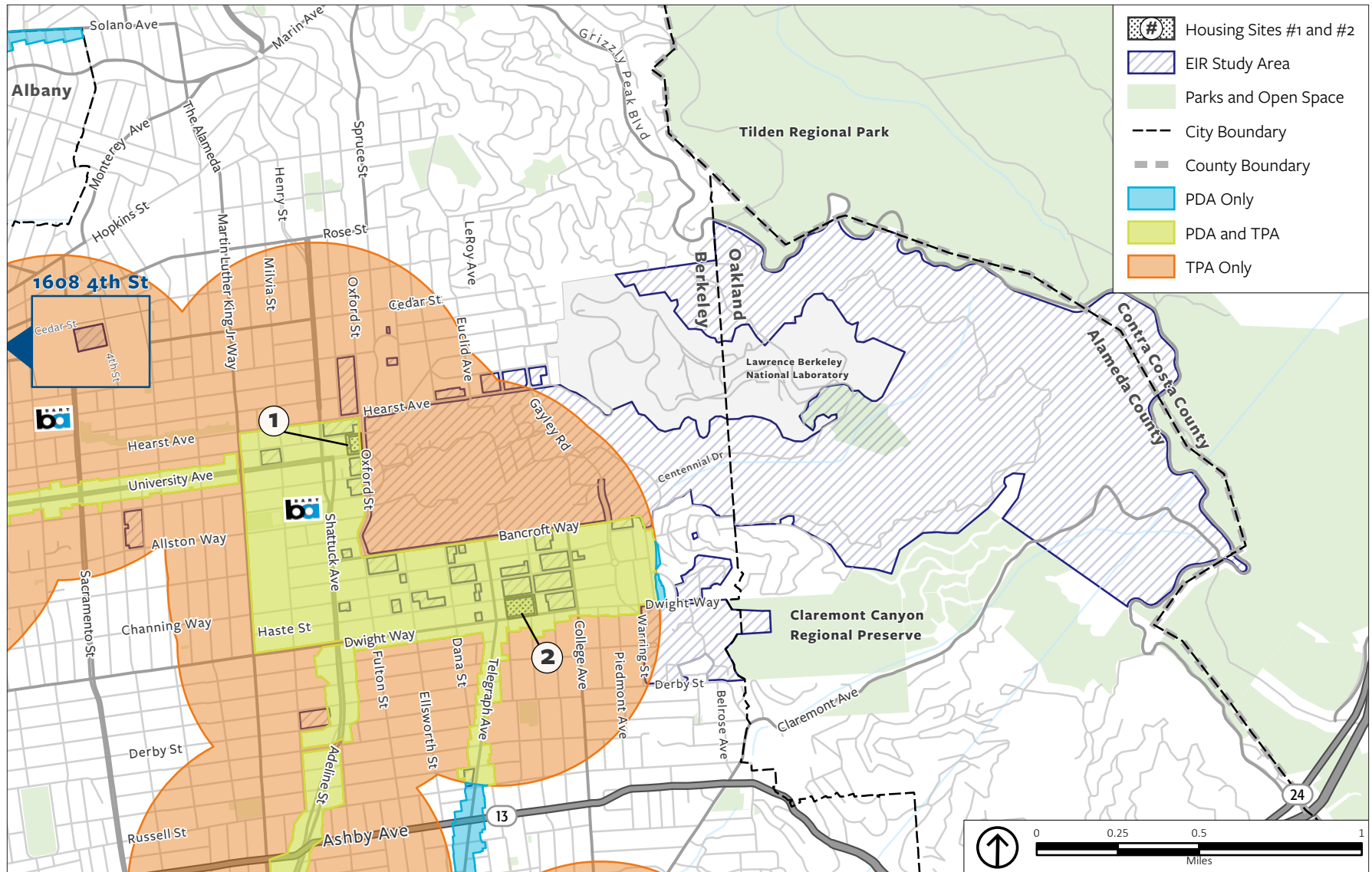
Impacts related to concentrated development in the PDAs are discussed throughout this Draft EIR, and specific quantified impacts are described in Chapter 5.2, Air Quality, Chapter 5.7, Greenhouse Gas Emissions, and Chapter 5.15, Transportation, of this Draft EIR.

With respect to potential future development in a TPA, Senate Bill (SB) 743, which became effective on January 1, 2014, amended CEQA by adding California Public Resources Code (PRC) Section 21099 regarding analysis of transportation, aesthetics, and parking impacts for urban infill projects, among other provisions.

With respect to transportation impacts, SB 743 required the Governor's Office of Planning and Research—the entity charged with drafting guidelines to help agencies implement CEQA—to identify new metrics for identifying and mitigating transportation impacts under CEQA, shifting from a congestion-based standard (level of service or LOS) to a VMT standard. CEQA Guidelines Section 15064.3 was added in December 2018 pursuant to SB 743 and describes specific considerations for evaluating a project's transportation impacts. Pursuant to CEQA Guidelines Section 15064.3(b)(1), projects within half a mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less-than-significant transportation impact. Accordingly, transportation impacts related to VMT from potential future development in the TPA that meets the specific criteria, including the proposed Housing Projects #1 and #2, are presumed to be less than significant. Transportation impacts consistent with the required VMT standard are discussed in Chapter 5.15, Transportation, of this Draft EIR.

³ Metropolitan Transportation Commission, Priority Development Areas (current). <http://opendata.mtc.ca.gov/datasets/priority-development-areas-current>, accessed June 8, 2020.

⁴ Metropolitan Transportation Commission, Transit Priority Areas (2017). <http://opendata.mtc.ca.gov/datasets/transit-priority-areas-2017>, accessed June 8, 2020



Source: ABAG/MTC, 2017; Alameda County, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Figure 5-1
Priority Development Areas and Transit Priority Areas

With respect to aesthetics and parking, PRC Section 21099(d)(1), states, “Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site located within a TPA shall not be considered significant impacts on the environment.” Accordingly, these topics are no longer to be considered in determining significant environmental effects for a project that meets all three of the following criteria:

- Is located on an infill site which is defined as “a lot located within an urban area that has been previously developed or on a vacant site where at least 75 percent of the perimeter of the site adjoins, or is separated only by an improved public right-of-way from, parcels that are developed with qualified urban uses.”
- Is a residential, mixed-use residential, or an employment-center project.
- Is in a transit priority area, which is defined as “an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program adopted pursuant to Section 450.216 or Section 450.322 of Title 23 of the Code of Federal Regulations.”

Accordingly, consistent with PRC Section 21099, no significant aesthetic or parking impacts can be made in this environmental analysis for development in the TPA which is a residential, mixed-use residential, or an employment-center project located on a qualified infill site. Housing Projects #1 and #2 meet all three criteria, and as such aesthetic and parking impacts for these projects are not discussed further in this EIR. Potential future development projects under the proposed LRDP Update, if and when they are carried out, would be exempt under PRC Section 21099 if such development projects are on infill sites with residential, mixed-use residential, or employment-generating uses within a TPA. As some of the potential future projects implementing the proposed LRDP Update may not be located within a TPA, this EIR considers aesthetics generally in Chapter 5.1, Aesthetics.

PARKING

Effective in 2010, parking inadequacy as a significant environmental impact was eliminated from the CEQA Guidelines by the Governor’s Office of Planning and Research. Accordingly, parking adequacy in the EIR Study Area is not discussed further in this EIR.

POTENTIAL EFFECTS OF THE PROJECT ON THE ENVIRONMENT

The California Supreme Court concluded in *California Building Industry Association vs. Bay Area Air Quality Management District (CBIA vs. BAAQMD)* that “CEQA generally does not require an analysis of how existing environmental conditions will impact a project’s future users or residents.” The *CBIA vs. BAAQMD* ruling provided for several exceptions to the general rule where an analysis of the project on the environment is warranted: (1) if the project would exacerbate existing environmental hazards (such as exposing hazardous waste that is currently buried); (2) if the project qualifies for certain specified exemptions (certain housing projects and transportation priority projects per PRC 21159.21 (f),(h); 21159.22 (a),(b)(3); 21159.23 (a)(2)(A); 21159.24 (a)(1),(3); or 21155.1 (a)(4),(6)); (3) if the project is exposed to potential noise and safety impacts on projects due to proximity to an airport (per PRC 21096); and (4) school projects require specific

assessment of certain environmental hazards (per PRC 21151.8). Therefore, the evaluation of the significance of project impacts under CEQA focuses on the potential impacts of the proposed project on the environment, including whether the proposed project may exacerbate any existing environmental hazards. Existing environmental hazards in the EIR Study Area include, but are not limited to, seismic hazards and wildfire. Therefore, while the effects of these hazards on the proposed project are generally not subject to CEQA review following the CBIA vs. BAAQMD case,⁵ a discussion of the project's potential to exacerbate these hazardous conditions is provided in Chapter 5-6, Geology and Soils, and Chapter 5-8, Hazards and Hazardous Materials, of this Draft EIR.

CUMULATIVE IMPACT ANALYSIS

A cumulative impact consists of an impact created as a result of the combination of the project evaluated in the EIR, together with other reasonably foreseeable projects causing related impacts. CEQA Guidelines Section 15130 requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable." Cumulative effects could occur when future development under the project is combined with development in the surrounding area or, in some instances, in the entire region.

Pursuant to CEQA Guidelines Section 15130(a)(3), where a cumulative impact is significant when compared to baseline conditions, the analysis must address whether the project's contribution to the significant cumulative impact is "considerable." If the contribution of the project is considerable, then the EIR must identify potentially feasible measures that could avoid or reduce the magnitude of the project's contribution to a less-than-considerable level. If the project's contribution is not considerable, it is considered less than significant and no mitigation for the project's contribution is required.

The cumulative discussions in Chapters 5.1 through 5.18 explain the geographic scope of the area affected by each cumulative effect (e.g., immediate project vicinity, county, watershed, air basin), which depends on the impact being analyzed. For example, in assessing macroscale air quality impacts, all development in the air basin contributes to regional emissions of criteria pollutants, and basinwide projections of emissions are the best tool for determining the cumulative impact. In assessing aesthetic impacts, on the other hand, only development within the local area of change would contribute to a cumulative visual effect since the area of change is only visible within the vicinity of that area.

The CEQA Guidelines provide two approaches to analyzing cumulative impacts. The first is the "list approach," which requires a listing of past, present, and reasonably anticipated future projects producing related or cumulative impacts. The second is the projections-based approach, where the relevant growth projections in an adopted general plan or related planning document designed to evaluate regional or area-wide conditions are summarized. A reasonable combination of the two approaches may also be used.

The cumulative impact analyses in this Draft EIR rely on regional growth projections prepared by ABAG (see Table 5-1, City and Regional Population and Housing Projections), as well as a list of City of Berkeley pending projects in the vicinity of Housing Projects #1 and #2 (see Table 5-2, Pending Projects in the City of

⁵ *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369.

5. ENVIRONMENTAL ANALYSIS

Berkeley), pending projects on the UC Berkeley campus (see Table 5-3, Pending UC Berkeley Projects), and pending projects on the Lawrence Berkeley National Laboratory campus (see Table 5-4, Pending Lawrence Berkeley National Laboratory Projects).

TABLE 5-1 CITY AND REGIONAL POPULATION AND HOUSING PROJECTIONS

	2018–2037						
Jurisdiction	2010	2018	2020	2030	2037	Difference	Percent Change
Berkeley							
Total Population	112,660	124,322	127,520	135,680	138,982	14,660	11.8%
Total Households	46,030	50,886	52,290	55,095	55,163	4,277	8.4%
Total Employment	90,350	115,727	116,435	118,885	121,457	5,730	5.0%
Total Housing Units	48,005	51,935	52,875	54,530	55,063	3,128	6.0%
Oakland							
Total Population	392,105	465,252	480,270	554,325	613,476	148,224	31.9%
Total Households	153,790	181,449	186,145	211,790	230,488	49,039	27.0%
Total Employment	179,065	246,006	247,310	259,175	269,448	23,442	9.5%
Total Housing Units	162,060	181,680	184,980	207,640	228,053	46,373	25.5%
Alameda County							
Total Population	1,515,230	1,677,188	1,711,460	1,868,635	2,013,326	336,138	20.0%
Total Households	545,140	603,169	614,965	668,285	711,506	108,337	18.0%
Total Employment	705,540	848,903	858,685	901,080	941,411	92,508	10.9%
Total Housing Units	552,485	597,419	604,995	646,635	697,096	99,677	16.7%
Contra Costa County							
Total Population	1,051,830	1,114,464	1,128,660	1,257,790	1,352,516	238,052	21.4%
Total Households	375,365	394,471	399,615	440,765	466,795	72,324	18.3%
Total Employment	360,230	411,026	414,290	458,255	489,532	78,506	19.1%
Total Housing Units	399,175	415,013	416,845	446,925	478,757	63,744	15.4%

Source: Association of Bay Area Governments, 2019, Projections 2040 by Jurisdiction, https://data.bayareametro.gov/api/views/grqz-amra/files/bf2d7a33-b68e-473d-800f-956do82o7b77?download=true&filename=formatated_tables_juris.xlsx, accessed October 21, 2020.

TABLE 5-2 PENDING PROJECTS IN THE CITY OF BERKELEY

Project Address	Description	Land Use(s)	Number of Stories	Housing Units	Square Footage
2120 Berkeley Way	Renovation of existing 3-story, 22,864-square-foot office building and construction of 3-story, 19,260-square-foot office space addition. Includes conversion of 3,521 square feet of ground-floor office space to retail.	Mixed-Use (Office/Retail)	6	0	41,674
2510 Channing Way	Construction of 8-story building with ground-floor commercial and 40 units above.	Mixed-Use (Residential/Commercial)	8	40	N/A
2524 Dwight Way	Construction of detached 2-story residence and renovation of existing City Landmark single-family residence ("Stuart House").	Residential	2	2	2,400
2435 & 2441 Haste Street	Demolition of existing 2-story residential building at 2435 Haste St. and replacement with 32-unit, 5-story, L-shaped residential building that would occupy space on both 2435 and 2441 Haste St. The existing 4-story mixed-use building at 2441 Haste St. would remain.	Residential	5	32	N/A
2503 Haste Street	Construction of 7-story, 92,000-square-foot mixed-use building	Mixed-Use	7	N/A	92,000
1951 Shattuck Avenue	Construction of 12-story residential building with 156 rental units and ground-floor retail	Mixed-Use (Residential/Commercial)	12	156	179,680
2023 Shattuck Avenue	Demolition of existing structure. Construction of new 7-story mixed-use building with 46 units and 1,250 square feet of ground-floor commercial space	Mixed-Use (Residential/Commercial)	7	46	N/A
2433 Telegraph Avenue	Construction of 7-story, 254-bed dormitory	Group Housing	7	254	92,938
2539 Telegraph Avenue	Construction of 70 mixed-income housing units	Mixed-Use	N/A	70	N/A
2597 Telegraph Avenue	Construction of 10 mixed-income townhouse units	Residential	N/A	10	N/A
1979-1987 Shattuck Avenue, 2101-2113 and 2125-2145 University Avenue, 1922 and 1930 Walnut Street	Construction of 250 mixed-income housing units and 14,000 square feet of retail space (Modera Acheson Commons)	Mixed-Use (Residential/Commercial)	N/A	250	N/A
Southside Plan Area	Southside Zoning Ordinance Amendments	Commercial, Residential, Mixed-Use	Up to 12	4,597	N/A

Notes: This table includes projects on blocks adjacent to Housing Projects #1 and #2. N/A = information not available
Sources:

City of Berkeley, "Building Eye" website, <https://berkeley.buildingeye.com/>, accessed November 19, 2020.

City of Berkeley, online current zoning applications log,

https://www.cityofberkeley.info/Planning_and_Development/Land_Use_Division/Current_Zoning_Applications_Log.aspx, accessed November 19, 2020.

City of Berkeley, City Council's Annual Housing Pipeline Report, September 22, 2020.

City of Berkeley, City staff "big project log," November 1, 2020.

Berkeleyside, Berkeley Housing Pipeline Map, <https://www.berkeleyside.com/2019/03/26/the-2019-berkeley-housing-pipeline-map-a-berkeleyside-special-report>, accessed November 19, 2020.

5. ENVIRONMENTAL ANALYSIS

TABLE 5-3 PENDING UC BERKELEY PROJECTS

Campus Zone	Project Name	Description	Construction/ Implementation	
			Start	Finish
Outside of EIR Study Area (Albany)	Albany Village Grad Student Housing	Approximately 700 single bedrooms in apartments for graduate students in 6-story building with 275 parking spaces	September 2022	August 2024
City Environs Properties	Bakar BioEnginuity Hub Incubator Space	Full-service life science incubator with private labs, wet, and dry open lab benches for faculty and student start-up researchers; preserves Woo Hon Fai Hall	March 2020	July 2021
Clark Kerr Campus	Beach Volleyball	Development of the beach volleyball complex and partial demolition of Building 21, which is approximately 8,000 square feet	June 2022	December 2022
Hill Campus East	Centennial Drive Bridge Replacement	Replacement of structurally deficient bridge on Centennial Drive. New overcrossing and re-route of Centennial Bridge, in partnership with Lawrence Berkeley National Laboratory	November 2021	November 2023
Outside of EIR Study Area (Emeryville)	Intersection Graduate Student Housing + Commercial Space	105 graduate student units.	Underway	December 2020
Campus Park	Law Library Stack Conversion	145,000 square feet of newly usable space	Not yet determined	Not yet determined
Campus Park	Moffitt Library Center for Connected Learning	Renovation of three lower floors of the library	February 2022	July 2023
Campus Park	Moffitt Library Seismic Retrofit	Seismic corrections.	May 2021	January 2022
Outside of EIR Study Area (Emeryville)	Optometry Surgery Center @ Intersection	New combined community clinic and continuing education facility in an existing commercial building	Not yet determined	Not yet determined
Hill Campus West	Softball New Stadium	Demolition of all existing facilities and construction of an NCAA-compliant field with a 1,500-seat capacity	June 2021	June 2022
City Environs Properties	Upper Hearst	Faculty housing and Goldman School of Public Policy expansion	Not yet determined	Not yet determined
Campus Park	Weill Hall Neurohub	Renovation of several areas of Weill Hall (formerly LSA) to create the physical center of Weill Neurohub East	Not yet determined	Not yet determined
Hill Campus East	Wildland Vegetative Fuel Management Plan	Plan intended to provide guidance to implement projects that reduce wildfire risk	Summer 2021	Not yet determined

Source: University of California, Berkeley, 2020.

TABLE 5-4 PENDING LAWRENCE BERKELEY NATIONAL LABORATORY PROJECTS

Project	Description	Status
Centennial Drive Bridge Replacement	Replacement of structurally deficient bridge on Centennial Drive. New overcrossing and re-route of Centennial Bridge, in partnership with UC Berkeley. UC Berkeley responsible for CEQA review	In design stage; construction to begin November 2021.
Advanced Light Source Upgrade	Upgrade of the Advanced Light Source (ALS) that will endow the ALS with revolutionary x-ray capabilities	Multi-year project; late 2021–late 2025.
BioEPIC Building	Construction of new 73,000-square-foot laboratory and office building	Under design; construction 2021 to 2023.
NERSC 9 Upgrades	Upgrade of Building 59 electrical and mechanical systems	Construction 95% complete; expected substantial completion by December 2020
Linear Asset Replacement Project	Sitewide utility project; utilities include natural gas, domestic water, electrical, communication/data, storm drain, and sanitary sewer systems	CEQA review pending; Phase 1 construction 2022 to 2023; Phase 2 construction 2025 to 2026; Phase 3 construction 2027 to 2029
B79 Demolition and Grizzly Yard Expansion	Historical site assessment, characterization, and demolition of 4,593-square-foot Salvage Processing Facility; includes slab and soil removal	Demolition to begin in 2020; construction through 2021
Grizzly Substation Expansion	Increase of main substation permanent capacity; includes two new transformers	Design starting 2020; construction 2022 to 2024
Bayview Parcel 1 Clean-up (1a/1b)	Demolition and remediation of a legacy concrete slab, utility tunnels, and soil disposal	2020 to 2021
Old Town Demolition Phases 5 – 7 (Completed)	Phase 5: Demolition of Buildings 4 and 14. Phase 6: Removal of Buildings 4 and 14 slabs; addressing of adjacent areas, and soils. Phase 7: Abatement and demolition of Buildings 7 and 7C, 21,915-square-foot WWII-era building and an associated trailer	Phase 5: Construction complete. Phase 6: Construction schedule under development; likely to occur during the next 2 to 3 years. Phase 7: Construction characterization and demolition 2020 to 2021
Transit Hub Sitework and Utilities Project	Construction of new transit hub (main shuttle drop off station) to support the with Lawrence Berkeley National Lab (LBNL) shuttle system; utility renewal-based modifications and improvements, including new electrical, sanitary sewer, water and storm drain. Part of the Seismic Safety and Modernization Project	Design underway; construction 2021 to 2022
Seismic Safety and Modernization (SSM) Project	Demolition of Building 54 (a 16,000-square-foot facility) and construction of new 46,000-square-foot facility with a cafeteria, conference room space for relocating Health Services and Human Resources personnel; includes seismic retrofit of B48	UC Regents approval in July 2020; construction activities 2021 to 2024
Bayview Site Utility Replacement Project	Replacement and upgrade of utilities (e.g., electrical, sanitary) in the Bayview planning area	Construction 2020 to 2021
B73 Modernization	Seismic upgrade of Building 73 (a 4,200-square-foot facility) and renovation to accommodate lab and office use; includes demolition of building interior and a small nearby utility building (Building 73A)	Construction 2020 to 2021.

TABLE 5-4 PENDING LAWRENCE BERKELEY NATIONAL LABORATORY PROJECTS

Project	Description	Status
Tensile Building Installation	Installation of 5,000-square-foot temporary tensile structure on site of recently demolished Building 5; will provide storage space for ALS-U and other Lab functions	Expected to be substantially complete by December 2020
EOC Tent Building	Erection of 3,200-square-foot temporary tent building for use by the LBNL Emergency Operation Center during COVID-19 "social-distancing" period in current LBNL Parking Lot Z; would also be used as temporary dining space during 3-year construction period of a new cafeteria (see SSM project)	Under design and review; CEQA and National Environmental Policy Act (NEPA) review to follow; expected to be constructed January 2021 and operated through 2023

Source: University of California Berkeley, 2020.

The cumulative analysis discussions in Chapters 5.1 through 5.18 of this Draft EIR use the regional growth projections approach as shown in Table 5-1 and account for growth from the proposed project within the EIR Study Area, in combination with impacts from projected growth from pending projects as shown in Tables 5-2 through 5-4. This provides a conservative analysis because it is assumed that many of the pending projects would be included in the regional growth projections. The EIR Study Area is defined in Chapter 3, Project Description, of this Draft EIR, and includes the UC Berkeley properties that would be included in and affected by the proposed project. The following provides a summary of the cumulative impact scope for each impact topic:

- **Aesthetics:** The cumulative setting for visual impacts includes potential future development under the proposed project combined with effects of development within and on lands adjacent to the EIR Study Area.
- **Air Quality:** Cumulative air quality impacts could occur from a combination of the proposed project with regional growth in the San Francisco Bay area air basin.
- **Biological Resources:** The geographic scope of the cumulative analysis for biological resources considers growth throughout the region.
- **Cultural Resources:** Cumulative impacts to cultural resources could occur from development growth within the EIR Study Area, combined with impacts from projected growth in the surrounding region.
- **Energy:** Cumulative impacts to energy resources could occur from development growth within the EIR Study Area, combined with impacts from projected growth in the surrounding region.
- **Geology and Soils:** Potential cumulative geological impacts could arise from a combination of future development under implementation of the proposed project together with future growth in the immediate vicinity of the adjoining jurisdictions.
- **Greenhouse Gas Emissions:** The cumulative impact analyses for greenhouse gas emissions are related to the ongoing development in the EIR Study Area and the entire region. Because greenhouse gas emissions are not confined to a particular air basin but are dispersed worldwide, the cumulative impact analysis focuses on the global impacts and thus is cumulative by nature.

- **Hazards and Hazardous Materials:** The cumulative analysis considers the effects of the proposed project within the EIR Study Area, in combination with impacts from projected growth in the rest of the City of Berkeley and surrounding region.
- **Hydrology and Water Quality:** The geographic context used for the cumulative assessment of hydrology and water quality impacts considers future development within the watersheds that encompass the EIR Study Area.
- **Land Use and Planning:** The geographic context for the cumulative land use and planning effects considers future development within the EIR Study Area, in combination with impacts from projected growth in the rest of the City of Berkeley and the surrounding region, as forecast by ABAG.
- **Noise:** The traffic noise levels are based on cumulative traffic conditions that take into account cumulative development in the region.
- **Population and Housing:** Impacts from cumulative growth are considered in the context of their consistency with regional growth projections.
- **Public Services:** Cumulative impacts are considered in the context of the growth from development within the EIR Study Area, in combination with impacts from projected growth in the rest of the City of Berkeley and the surrounding region, as forecast by ABAG.
- **Parks and Recreation:** Cumulative impacts are considered in the context of projected growth in the rest of Alameda County and the surrounding region, as forecast by Plan Bay Area 2040, and contiguous with the service area boundaries of the service providers evaluated in Chapter 5.14.
- **Transportation:** The analysis of the proposed project addresses cumulative impacts to the transportation network in the EIR Study Area and the surrounding area.
- **Tribal Cultural Resources:** Cumulative impacts to cultural resources could occur from development growth within the EIR Study Area, combined with impacts from projected growth in the surrounding region.
- **Utilities and Service Systems:** Cumulative impacts are considered in the context of the growth from development under the proposed project within the City of Berkeley combined with the estimated growth in each utility's service area.
- **Wildfire:** The analysis of the proposed project includes a discussion of how cumulative development may exacerbate wildfire risk in the EIR Study Area and the surrounding area.

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5.1 AESTHETICS

This chapter describes the potential aesthetics impacts associated with the approval and implementation of the proposed LRDP Update (the proposed project). As described in Chapter 5, Environmental Analysis, Housing Projects #1 and #2 are exempt from this aesthetics evaluation pursuant to Public Resources Code (PRC) Section 21099. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential aesthetics impacts, and identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts.

5.1.1 ENVIRONMENTAL SETTING

5.1.1.1 REGULATORY FRAMEWORK

State

California Building Codes

The State of California provides a minimum standard for building design through Title 24, California Building Standards Code, of the California Code of Regulations. The California Building Code (CBC) is in Part 2 of Title 24. The CBC is updated on a three-year cycle. It is effective statewide, but a local jurisdiction may adopt more restrictive standards based on local conditions under specific amendment rules prescribed by the State Building Standards Commission. The CBC includes standards for outdoor lighting that are intended to reduce light pollution and glare by regulating light power and brightness, shielding, and sensor controls.

California Public Resources Code Section 21099

California PRC Section 21099, formerly Senate Bill 743, passed in 2013, made changes to the California Environmental Quality Act (CEQA) for projects located in transit-oriented development areas. Among these changes are that a project's aesthetics impacts are no longer considered significant impacts on the environment if the project is a residential, mixed-use residential, or employment center project and if the project is located on an infill site within a transit priority area (TPA).¹ This was implemented to help the State achieve greenhouse gas reductions while prioritizing jobs and housing. As described in Chapter 5, Environmental Analysis, of this Draft Environmental Impact Report (EIR), and shown on Figure 5-1, Priority Development Areas and Transit Priority Areas, portions of the EIR Study Area are located within a TPA as identified in Plan Bay Area, the guiding framework for transportation and land use planning throughout the San Francisco Bay area, coordinated by the regional planning agencies, the Association of Bay Area Governments, and the Metropolitan Transportation Commission. All of the Campus Park, portions of the

¹ California Legislative Information, 2013, Senate Bill No. 743, Chapter 386, http://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB743&search_keywords=, accessed July 9, 2020.

Clark Kerr Campus and the Hill Campus West, and the majority of UC Berkeley–owned sites within the City Environs Properties are in a TPA, including Housing Projects #1 and #2.² Therefore, within these areas where projects are infill and also a residential, mixed-use residential, or employment center project, pursuant to PRC Section 21099(d), aesthetics impacts shall not be considered significant environmental impacts.

Housing Projects #1 and #2 meet all of the PRC Section 21099 criteria because they are (1) in a TPA; (2) on an infill site that has been previously developed within an urban area of the city of Berkeley; and (3) a mixed-use project that includes primarily residential uses. Thus, this EIR does not consider aesthetics in determining the significance of the impacts of Housing Project #1 and #2 under CEQA.

University of California

UC and UC Berkeley Design Review

UC capital projects require review prior to approval for design, cost, site, seismic safety, and environmental impact. This process includes several policies and procedures required for capital improvement projects. The UC’s Policy for Independent Design and Cost Review of Building Plans is to maintain the quality of design of UC construction projects, and review may focus on compatibility and appropriateness of a project’s design within its setting.³ For the UC Berkeley campus, the UC Berkeley Design Review Committee provides advice to the Campus Architect regarding historic preservation and design of UC Berkeley buildings and spaces. The UC Berkeley Design Review Committee is made up of design professionals and faculty from the disciplines of architecture, landscape architecture, urban design and planning, and historic preservation.⁴

Physical Design Framework

UC requires every campus to have a Physical Design Framework. UC Berkeley’s Physical Design Framework, dated November 2009, augments the design guidance from the existing LRDP and provides additional guidance for capital investment within the City Environs Properties. The intent of the Physical Design Framework is to provide more comprehensive design guidance than the existing LRDP to create a coherent architectural image and identity, particularly with respect to exterior design and materials. It focuses primarily on the Campus Park and UC Berkeley–owned sites within the City Environs Properties. The Physical Design Framework is currently being updated, along with the proposed LRDP Update, and will continue to provide design guidance for UC Berkeley development that implements the LRDP.

² Metropolitan Transportation Commission, 2019, Transit Priority Areas (2017), <http://opendata.mtc.ca.gov/datasets/transit-priority-areas-2017?geometry=-122.321%2C37.857%2C-122.240%2C37.881>, accessed July 6, 2020.

³ University of California, 1985, Policy for Independent Design and Cost Review of Building Plans, <https://policy.ucop.edu/doc/3100623/>, accessed November 22, 2020.

⁴ University of California, Berkeley Capital Strategies, 2020, Committees: Planning, Design, and Finance, <https://capitalstrategies.berkeley.edu/committees>, accessed November 22, 2020.

Landscape Heritage Plan

The UC Berkeley Landscape Heritage Plan, dated June 2004, was prepared to complement the New Century Plan and Landscape Master Plan to safeguard the natural and cultural resource legacies of the UC Berkeley campus, which contains many historic buildings and significant landscapes. The Landscape Heritage Plan is intended to provide direction to UC Berkeley staff to prevent character-defining landscape features from being subjected to inappropriate alterations or removal, and to protect the overall aesthetic of the UC Berkeley campus. It focuses specifically on providing guidance for the beaux-arts neoclassical architecture of the “Classical Core,” which encompasses a large, central portion of the Campus Park. The Landscape Heritage Plan’s goals include respecting the character of the historic landscapes in the Classical Core; integrating functional, aesthetic, and sustainable considerations; and providing a safe and accessible campus environment, such as through access standards, circulation routes, and adequate lighting, furnishings, and signage. The design process for landscape improvements within the Classical Core requires project participants to review UC Berkeley site improvement requirements and codes and detailed project-specific guidelines; consult with the Campus Landscape Architect; and submit landscape plans and details to the Campus Landscape Architect and Design Review Committee for review and approval.

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes such as the CBC, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues. UC Berkeley’s Campus Design Standards contain construction specifications to guide design and ensure that new construction and renovation projects at UC Berkeley utilize CBPs and are integrated with the existing campus. They are administered by the Campus Building Department and apply to all construction projects sponsored by the University of California. The Campus Design Standards include requirements for building materials, lighting, glass and glazing, screening, planting, and more. They largely adapt and build from other applicable regulations, such as the CBC. The Campus Design Standards are updated every three years to incorporate updates to the CBC.

In addition to providing lighting that complies with the CBC, the Illuminating Engineering Society light levels, the California Energy Code, and applicable UC policies such as the UC Sustainability Practices Policy, the Campus Design Standards include these requirements for exterior lighting:

- The campus goal for exterior lighting is to promote safety and create visibility by creating layers of light as well as reducing light pollution and energy consumption.
- Light fixtures shall generally include cut-off shields as needed to prevent light trespass into neighboring off-campus areas; however, some trespass may be allowable in lower-density areas, such as through glades and natural areas, where minimal light spill enhances safety.
- Pedestrian and bicycle parking area lighting shall be downlit.⁵

⁵ University of California, Berkeley, 2020, *UC Berkeley Campus Design Standards*. Section 26 56 00, Exterior Lighting, page 343. https://facilities.berkeley.edu/sites/default/files/ucb_campus_design_standards_2020.pdf, accessed October 16, 2020.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to aesthetics as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.1.3, Impact Discussion.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the cities of Berkeley and Oakland related to aesthetics resources that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update that are not exempt from aesthetics evaluation pursuant to PRC Section 21099.

City of Berkeley

Berkeley General Plan

The City of Berkeley's General Plan includes policies pertaining to aesthetics in the Land Use (LU) Element and in the Urban Design (UD) and Preservation Element, which emphasizes visual character and cultural meaning when considering historic preservation and urban design. These include the following:

- Policy LU-3: Encourage infill development that is architecturally and environmentally sensitive, embodies principles of sustainable planning and construction, and is compatible with neighboring land uses and architectural design and scale.
- Policy UD-3: Use regulations to protect the character of neighborhoods and districts and respect the particular conditions of each area.
- Policy UD-31: Construction should avoid blocking significant views, especially ones toward the Bay, the hills, and significant landmarks such as Sather Tower, Golden Gate Bridge, and Alcatraz Island. Whenever possible, new buildings should enhance a vista or punctuate or clarify the urban pattern.

Berkeley Downtown Area Plan

The Berkeley Downtown Area Plan, adopted in 2012, builds off of the previous Downtown Plan adopted in 1990 and includes the following policies pertaining to the aesthetics of the Downtown Berkeley area.

- Goal LU-4: New development should enhance Downtown’s vitality, livability, sustainability, and character through appropriate land use and design.
 - Policy LU-4.2: Development Compatibility. Encourage compatible relationships between new and historic buildings and reduce localized impacts from new buildings to acceptable levels. The size and placement of new buildings should: reduce street-level shadow, view, and wind impacts to acceptable levels; and maintain compatible relationships with historic resources (such as streetwall continuity in commercial areas).
- Goal HD-3: Provide continuity and harmony between the old and the new in the built environment.
 - Policy HD-3.1: Contextual Design: To promote continuity between old and new, new construction and building alterations should meet streets and public spaces in contextual ways that line streets with building streetwalls and support a pedestrian-oriented public realm.
 - Policy HD-3.2: Continued Variety: Recognizing building height, massing and scale, allow for continued variety that respects Downtown’s context.
- Goal HD-4: Improve the visual and environmental quality of Downtown, with an emphasis on pedestrian environments that are active, safe, and visually engaging. Encourage appropriate new development Downtown.
 - Policy HD-4.4: Design Creativity and Excellence: Continue Berkeley’s tradition of architectural excellence. Support design creativity during the development approval process and in the resulting construction. All new construction and building alterations should be of the highest quality and promote sustainability.
- Goal HD-5: Enhance and improve the physical connection between Downtown and the University of California.
 - Policy HD-5.1: Encourage the University to use the Downtown Design Guidelines and Downtown Area Plan to guide the character and scale of its future development. Strongly encourage the university to design buildings that are appropriate to Downtown and make streets that abut university property pedestrian-friendly, in a manner required of any Downtown developer. Along street frontages of university buildings Downtown, the ground floor should be pedestrian-friendly and have windows and entrances and avoid blank walls. Encourage active street-level uses. Provide retail or other active public-serving uses along Shattuck Avenue and University Avenue.

Downtown Berkeley Design Guidelines

The 2012 Downtown Berkeley Design Guidelines implement objectives and policies of the Historic Preservation and Urban Design chapter of the Berkeley Downtown Area Plan. Relevant guidelines include:

For new construction projects located on narrow east-to-west streets and over 75 feet in height, prepare an analysis of shade impacts on public open spaces and pedestrian sidewalks across the street. East of Shattuck, analyze visual impacts of ridgeline views to the east. Based on such analysis/analyses, consider upper-floor setbacks, setbacks at street corners or other techniques to mitigate negative impacts.

Berkeley Southside Specific Plan

The Berkeley Southside Specific Plan, adopted in 2011, applies to Berkeley's Southside neighborhood, which is located just south of the Campus Park and includes some UC Berkeley-owned sites in the City Environs Properties. Its community character element includes the following relevant policy:

- Policy CC-A3: Improve the physical appearance and perception of safety in the Telegraph Commercial Subarea.

University Avenue Strategic Plan

For properties located along University Avenue, which includes some UC Berkeley-owned sites in the City Environs Properties west of the Campus Park, the City of Berkeley has a University Avenue Strategic Plan. This plan includes University Avenue design guidelines to maintain and enhance the character of this area. The design guidelines emphasize building configuration and orientation—designing with solar orientation in mind; avoiding new buildings casting shadows of more than 20 feet onto adjacent properties' rear yard when the southern sun is at a 29-degree angle on the winter solstice; and preserving the light, air, and privacy of existing structures around new developments. Courtyards, pedestrian pathways, and plazas should be illuminated with fixtures that are of an appropriate scale and located and designed to minimize direct glare beyond the service area.

Berkeley Municipal Code

The City of Berkeley Municipal Code contains several regulations pertaining to lighting and glare.

Section 23E.56.070, Development Standards, states that shade studies are required for all proposed buildings exceeding three stories or 40 feet in sites zoned Telegraph Avenue Commercial District. Based on the findings of the shade study, the fourth or higher story of the building may be required to be set back to minimize shade impacts on adjacent properties or the public right-of-way. Furthermore, when the subject lot is adjacent to an abutting or confronting lot in a residential zone, the requirements of Sections 23E.04.050, Special Yard Requirements for C- Lots Abutting Residential Zones, and 23E.04.060, Special Building Feature Requirements for C- Lots Abutting Residential Zones, shall apply for additional yard and building feature requirements.

Section 23D.04.080, Special Building Feature Requirements for R-Lots (Residential-zoned lots), states that the Berkeley Municipal Code includes that exterior lighting on a residentially zoned property shall be shielded and directed downward and away from property lines to prevent excessive glare beyond the subject property, and lights on motion sensors shall not be triggered by movement or activity located off the property on which the light is located. In addition, under Section 23E.04.060, Special Building Feature Requirements for C-Lots (Commercial-zoned lots) Abutting Residential Zones, the municipal code requires that exterior lighting be shielded in a manner that avoids direct glare onto abutting lots in the residential district.

City of Oakland

The Oakland General Plan includes policies pertaining to aesthetics in several of its elements, including the Open Space, Conservation, and Recreation Element, dated June 1996, and the Land Use and Transportation Element, dated March 1998. The open space policies are designated “OS,” transportation, transit-oriented policies are designated “T,” and “N” represents neighborhood policies as follows:

- Policy OS-1.3: Development of hillside sites. On large sites with subdivision potential, generally conserve ridges, knolls, and other visually prominent features as open space. Maintain development regulations which consider environmental and open space factors such as land stability, plant and animal resources, earthquake and fire hazards, and visual impacts, in the determination of allowable density. Where hillside development does occur, encourage creative architecture and site planning which minimizes grading and protects the natural character of the hills.
- Policy OS-4.3: Protection of rural character. Conserve the rural, open character of areas which have historically developed at very low densities, particularly those areas where the prevailing lot size is one acre or larger.
- Policy OS-9.1: Protection of natural landforms. Design new development to preserve natural topography and terrain. Enhance prominent topographic features where appropriate by parks, plazas, or architectural expressions.
- Policy OS-10.1: View protection. Protect the character of existing scenic views in Oakland, paying particular attention to views of the Oakland Hills from the flatlands; views of downtown and Lake Merritt; views of the shoreline; and panoramic views from Skyline Boulevard, Grizzly Peak Boulevard and other hillside locations.
- Policy OS-10.2: Minimizing adverse visual impacts. Encourage site planning for new development which minimizes adverse visual impacts and takes advantage of opportunities for new vistas and scenic enhancement.
- Policy N7.2: Defining Compatibility: Infrastructure availability, environmental constraints and natural features, emergency response and evacuation times, street width and function, prevailing lot size, predominant development types and height, scenic values, distances from public transit, and desired neighborhood character are among the factors that could be taken into account when developing and mapping zoning designation or determining “compatibility.” These factors should be balanced with the citywide need for additional housing.
- Policy N9.3: Maintaining a positive image: the city should strive to maintain a positive and safe public image.
- Policy T6.5: Protecting scenic routes: The city should protect and encourage enhancement of the distinctive character of scenic routes within the city, through prohibition of billboards, design review, and other means.

5.1.1.2 EXISTING CONDITIONS

This section describes the existing visual setting in the EIR Study Area. Visual quality itself is a subjective experience. The following descriptions concentrate on aspects most relevant to the standards of significance listed in Section 5.1.2, Standards of Significance, and include visual character, scenic vistas, and

lighting and glare. Visual character in an urban area includes a general pattern of building scale, form, style, and relationships with other buildings and the landscape.

Visual Character

The EIR Study Area is a dense, urbanized area with the built environment set against the backdrop of the East Bay hills, including those that make up the Hill Campus East subarea. A variety of land use types give the EIR Study Area and surrounding areas their character, including residential, commercial, institutional, office, mixed-use, and other uses. UC Berkeley, which has expanded and evolved since its founding in 1868, is made up of a mix of building types, including many architecturally significant styles and historic buildings that contribute heavily to the character of UC Berkeley as a whole. The visual character of each EIR Study Area subarea is described following.

Campus Park

The Campus Park forms the main part of the UC Berkeley campus, with the majority of academic and student life uses located in this area. The most significant visual characteristics of the Campus Park are provided by the architectural styles of many of the buildings and the natural areas, including Strawberry Creek, that give the Campus Park a parklike feel.

The Campus Park includes approximately 90 buildings that vary in age and design. The oldest building is South Hall, which was constructed in 1873. Building heights vary greatly, with some buildings consisting of one story and others over ten stories. Green spaces and walkways are scattered throughout the Campus Park between buildings. The buildings within the Campus Park do not have a single, coherent architectural style, but demonstrate three eras: the Picturesque, the Beaux-arts, and the Modernist. The Picturesque era marks the beginning of the UC Berkeley campus when it was founded, where a park-like campus stemming from the natural order of the landscape was envisioned, highlighting the campus's trees and Strawberry Creek. Picturesque-era buildings make up many historic structures along the forks of Strawberry Creek; they were designed as informal, articulated volumes responding to the natural contours of the UC Berkeley campus. The neoclassical Beaux-arts-era style buildings make up what is referred to as the Classical Core of the Campus Park, which includes buildings and features like California Hall, Hearst Memorial Mining Building, Durant Hall, Wellman Hall, Doe Library, Wheeler Hall, Sather Gate, and Sather Tower, also known as the Campanile Tower, also known as the Campanile. These buildings are mostly located in the central and northeastern portions of the Campus Park, and are defined by largely granite facades, tile roofs, and copper trim. Through the mid-1900s, buildings began to be built in a more simple and less ornamental style, called "stripped classical," including Sproul Hall, Mulford Hall, Lewis Hall, Bancroft Library, the Law Building, and Dwinelle Hall. Finally, the Modernist era is defined by the campus landscape and architecture of more recent decades, where the functionality of the landscape, including to accommodate vehicles and circulation, was prioritized. In addition, landscape styles in this era were characterized by simplicity and low-maintenance and informal outdoor living spaces.⁶

⁶ University of California, Berkeley, 2004, Landscape Heritage Plan.

Located at the base of the hills at the eastern edge of the city of Berkeley, the Campus Park has varying topography that follows the rolling hills. Two forks of Strawberry Creek cross the Campus Park, banked by riparian natural areas, meandering pathways, and native and naturalized plants that form dense wooded areas for biological habitat and passive recreational purposes. Significant portions of the Campus Park have a tall tree canopy consisting largely of California live oak, Tasmanian blue gum, and California redwoods, among other species. A number of glades, groves, and open spaces are scattered throughout the UC Berkeley Campus, such as the West Crescent on the western edge of the Campus Park, Memorial Glade and Observatory Hill on the northern portion of the Campus Park, and the North Field and Faculty Glade on the southeastern portion of the Campus Park.

Major gateways into the Campus Park include the North Gate on the northern edge of the Campus Park, the East Gate on the eastern edge, Sproul Plaza on the southern edge, and the West Crescent on the western edge. Views into the Campus Park from Sproul Plaza are defined by the classical architecture, and the West Crescent, located in a heavily trafficked area at the intersection of Oxford Street and University Avenue, provides a strong image of the campus's parklike feel with its lawns and the backdrop of the adjacent Eucalyptus Grove. The North Gate provides a major pedestrian thoroughfare on the edge of Observatory Hill. The East Gate (at the intersection of University Drive and Gayley Road), a less-frequented gateway, provides a main pedestrian and vehicle access point framed by tall buildings and trees on the eastern edge of the Campus Park.

Clark Kerr Campus

The Clark Kerr Campus is a Spanish mission-style complex that was built in 1949, with white facades and red tile roofs defining its unique architecture. It consists of a series of buildings, some connected by roofs over walkways, which are spread out on the Clark Kerr Campus with small open spaces and walkways in between. The buildings range from one to four stories. The Clark Kerr Campus currently consists of student housing and amenities, conference space including the Krutch Theater, and childcare and development centers. The Clark Kerr Campus also includes recreational facilities, including a pool, multi-purpose tennis/basketball courts, sand volleyball courts, and track field.

Hill Campus West

The Hill Campus West is similar in visual character to the Campus Park, in that it is set against the base of the hills that form the backdrop and natural area east of the Campus Park and is devoted primarily to campus life uses, with trees and landscaping dispersed throughout. The terrain in the Hill Campus West is steep, with elevation increasing eastward further into the East Bay hills. Gayley Road/Piedmont Avenue defines the western edge of this zone, and Centennial Drive extends east from Stadium Rim Way into Strawberry Canyon and the main entrance of the Hill Campus East. This zone has mixed building styles supporting student housing and recreational facilities, including the Theatre (a large outdoor amphitheater) and the California Memorial Stadium.

Hill Campus East

The Hill Campus East consists mostly of open space and serves as an important natural area for UC Berkeley and city residents. Its steep hills and canyons are home to a wide variety of plant and animal life, and it also includes the UC Berkeley Botanical Garden, which supports a wide array of plant life for research and conservation and is open to visitors.

City Environs Properties

UC Berkeley-owned properties are scattered throughout the Berkeley city environs to the north, west, and south of the Campus Park, referred to as the City Environs Properties. Most of these sites are located within one-quarter mile of the Campus Park, with many buildings located along Hearst Avenue bordering the Campus Park to the north, Oxford Street bordering the Campus Park to the west, and between Bancroft Way and Dwight Way south of the Campus Park. Much of these areas are densely developed with a mix of residential, commercial, mixed-use, and institutional uses, which lends to its varied visual character. There is a wide range of old and new development and a number of historically significant properties, which are listed in Chapter 5.4, Cultural Resources. Buildings of the UC Berkeley City Environs Properties typically range between one and ten stories.

Scenic Vistas

Scenic vistas within the EIR Study Area are primarily located within the Hill Campus East. The elevation of this area provides panoramic westward views toward the San Francisco Bay, with the city of San Francisco and the Golden Gate Bridge visible on the horizon. In particular, there are a number of scenic vistas off of Grizzly Peak Boulevard, such as the Grizzly Peak Vista Point and the Grizzly Peak Boulevard Overlook, as well as views offered from the Lawrence Hall of Science and from fire roads in this zone. While views from other locations and from some of the taller UC Berkeley buildings in the rest of the EIR Study Area may also provide views, scenic vistas in terms of this analysis are limited to those accessible by the general public.

Light and Glare

Light pollution refers to all forms of unwanted light in the night sky, including glare, light trespass, sky glow, and over-lighting. Views of the night sky are an important part of the natural environment. Excessive light and glare can be visually disruptive to humans and nocturnal animal species. Generally, it takes the form of street lighting along major streets and highways and nighttime illumination of commercial buildings, shopping centers, and industrial buildings. Light spillage from residential areas is usually screened by trees.

More significant sources of light and glare in the EIR Study Area include locations associated with nighttime events where a larger amount of lighting is necessary, such as at sport fields, including California Memorial Stadium in the Hill Campus West and Edwards Stadium and Evans Diamond in the Campus Park. Typically, nighttime lighting and glare generated by these venues are temporary and only occur during a limited number of evenings per year when events are scheduled.

5.1.2 STANDARDS OF SIGNIFICANCE

Based on the preliminary analysis in the Notice of Preparation (see Appendix A, Notice of Preparation and Scoping Comments, of this Draft EIR), it was determined that development of the proposed project would not result in significant environmental impacts related to substantial damage to scenic resources within a State scenic highway because the EIR Study Area is not on or within the viewshed of a State scenic highway. Therefore, this standard is not discussed further in this EIR.

The proposed project would result in a significant aesthetic impact if it would:

1. Have a substantial adverse effect on a scenic vista.
2. Substantially degrade the existing visual character or quality of public views (i.e., views that are experienced from publicly accessible vantage points) of the site and its surroundings if in a non-urbanized area, or would the project conflict with applicable zoning and other regulations governing scenic quality if in an urbanized area.
3. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.
4. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.1.3 IMPACT DISCUSSION

This section analyzes the proposed project's potential impacts to aesthetics. The evaluation of aesthetics and aesthetic impacts is highly subjective. It requires the application of a process that objectively identifies the visual features of the environment and their importance. Aesthetic description involves identifying existing visual character, including visual resources and scenic vistas unique to the EIR Study Area, as described in Section 5.1.1.2, Existing Conditions. Changes to aesthetic resources resulting from implementation of the proposed project are identified and qualitatively evaluated based on the proposed modifications to the existing setting and the viewer's sensitivity. Aesthetics impacts from the proposed project are determined using the threshold criteria discussed in Section 5.1.2, Standards of Significance.

In accordance with PRC Section 21099, described under Section 5.1.1.1, Regulatory Framework, aesthetics impacts shall not be considered significant environmental impacts for projects that: are located within a TPA; are residential, mixed-use residential, or employment center projects; and are located on an infill site. Also previously stated, parts of the EIR Study Area are in a TPA, including Housing Projects #1 and #2.

Potential future development projects under the proposed LRDP Update would also be infill and support residential, mixed-use residential, or employment-generating uses. Housing Projects #1 and #2 represent two such projects that are in the TPA on infill sites and are mixed-use residential projects. Accordingly, aesthetic impacts of Housing Projects #1 and #2 and of any other future development under the proposed LRDP Update meeting these criteria, are not considered significant impacts on the environment and are not included in this impact discussion. Aesthetics impacts analyzed in this section pertain only to sites in the EIR Study Area that would not meet all the criteria for applying PRC Section 21099. This could include potential

future development within the TPA that is not infill and/or does not support residential, mixed-use residential, or employment-generating uses.

As shown on Figure 5-1, Priority Development Areas and Transit Priority Areas, in Chapter 5, Environmental Analysis, some areas of the EIR Study Area are not in a TPA. These include the Hill Campus West, the Hill Campus East, the Clark Kerr Campus, and three sites in the City Environs Properties: 1608 4th Street in West Berkeley and the Foothill-La Loma and Upper Hearst properties, located across Hearst Avenue from the northeast corner of the Campus Park. Finally, the proposed LRDP Update is a land use plan intended to guide future physical development of the UC Berkeley campus and does not commit UC Berkeley to any specific project. Therefore, the aesthetics analysis in this chapter only provides a programmatic analysis of the LRDP Update because, as previously described, Housing Projects #1 and #2 are exempt from further aesthetics analysis, and the actual sites and designs of other future development under the LRDP Update are not yet determined.

AES-1	The proposed project would not have a substantial adverse effect on a scenic vista.
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Future development under the proposed LRDP Update would have the potential to affect scenic vistas if new or intensified development blocked views of areas that provide or contribute to such vistas. Potential effects could include blocking views of a scenic vista from specific publicly accessible vantage points or the alteration of the overall scenic vista itself. Such alterations could be positive or negative depending on the characteristics of individual future developments and the subjective perception of observers.

As discussed previously, scenic vistas in terms of this analysis are limited to those accessible by the general public. So, though select locations, such as tall buildings or private properties within or adjacent to the EIR Study Area, may offer scenic views toward the San Francisco Bay or of the East Bay hills, these are not publicly accessible and are not included as a “scenic vista” analyzed in this Draft EIR. Scenic vistas accessible by the general public would primarily include those from fire roads and vehicle turnouts within the Hill Campus East, which provide views toward the San Francisco Bay from a higher elevation than the rest of the City of Berkeley. Other locations throughout the EIR Study Area may offer scenic views, though the developed nature of the EIR Study Area limits scenic views depending on location.

Due to its location in the East Bay hills, the higher elevation of the Hill Campus East provides scenic vistas at various points looking toward the East Bay plain and San Francisco Bay. Such locations include Grizzly Peak Vista Point and Grizzly Peak Boulevard Overlook. Scenic vistas from other locations of the EIR Study Area include westward views toward the San Francisco Bay, or eastward views of the East Bay hills. As previously stated, the EIR Study Area is urbanized.

Potential future development under the proposed LRDP Update is largely expected to occur in existing urban areas, primarily in the form of infill/intensification on sites either already developed and/or underutilized. This future development would have a lesser impact on scenic vistas than an undeveloped area or isolated parcel away from existing development. Generally, current public viewing locations in this setting are obstructed as a result of the natural topography, existing mature trees, and/or existing buildings.

The proposed LRDP Update includes the potential for development of buildings that are taller than those that currently exist, which in some locations may have the potential to impact scenic views. As illustrated by the potential development projects listed in Table 3-2, Potential Areas of New Development and Redevelopment, in Chapter 3, Project Description, potential development projects could include more stories than currently exist at those locations. Though the potential development projects listed in Table 3-2 (excluding Housing Projects #1 and #2 which are exempt from an aesthetics evaluation) are not specific development projects proposed, these are the types of potential future projects that could be undertaken to implement the proposed LRDP Update and realize the proposed LRDP Update development program. However, as previously described, many development projects within the EIR Study Area would be exempt from aesthetics impacts pursuant to PRC Section 21099.

Most development under the proposed LRDP Update would be primarily in the Campus Park, the Clark Kerr Campus, and the City Environs Properties. There is a proposed increase in the square footage of academic life space and the potential for climate and resiliency projects in the Hill Campus East, as described in Chapter 3, including potential utility upgrades and additions such as the addition of solar arrays. However, the potential to block a view of a scenic resource would be limited by the natural topography and mature trees and views would vary depending on location. The elevation of the region generally increases continuously eastward, from the San Francisco Bay to the East Bay hills. The Hill Campus East is at a higher elevation than the rest of the EIR Study Area and generally ranges from between 400 feet to nearly 1,800 feet above mean sea level (msl).⁷ The highest number of stories listed in Table 3-2, Potential Areas of New Development and Redevelopment, is 17 stories under Housing Project #2. Though Housing Project #2 is exempt from aesthetics analysis, for comparison, its proposed maximum building height is approximately 200 feet on a current site elevation of around 240 feet above msl.⁸ Most scenic viewpoints from the East Bay Hills would be above the combined elevation and height of this project, which shows that increased building heights would not greatly impact views from the hills, particularly those from vehicle pullouts along Grizzly Peak Boulevard toward the peak of the hills. Similarly, potential future development on the Clark Kerr Campus could result in taller buildings within this zone. However, this development would be infill, and relative to the elevation of the East Bay Hills, it would also be unlikely to block prominent views from scenic vistas toward the San Francisco Bay. Therefore, while adding modifications to the built environment, development from the proposed project would be unlikely to result in substantial, adverse effects on scenic vistas of the San Francisco Bay from public vantage points in the East Bay Hills.

The proposed LRDP Update includes the following objectives pertaining to visual resources:

- Reinforce and complement the physical organization of the Campus Park and other university properties. Maintain and enhance historic buildings, landscapes, and site features associated with the historic Frederick Law Olmsted and John Galen Howard plans for the campus and with the Strawberry Creek corridor, to the extent possible. Consider the integrity of significant building and landscape ensembles when siting and designing new projects.

⁷ University of California, Berkeley, 2004, 2020 Draft Environmental Impact Report: Long Range Development Plan and Chang-Lin Tien Center for East Asian Studies, page 4.1-9.

⁸ University of California, Berkeley, March 2020, Student Housing: People's Park Detailed Project Program.

- Continue to preserve, maintain, and reinterpret the Campus Park’s landscape heritage, including the Classical Core, campus glades, natural areas, and Strawberry Creek. Respect views toward the Golden Gate across the Central Glades, as well as other vistas and views that reinforce the campus’s physical structure.

As with all UC Berkeley projects, future potential development would undergo UC Berkeley’s design review process to ensure projects are implemented in accordance with UC Berkeley requirements to reduce impacts to aesthetics, such as those under the proposed LRDP Update. Therefore, development and design review upon the proposal of potential future development would limit the significant adverse impact that potential future development could have on a scenic vista. The developed nature of the EIR Study Area, combined with compliance with UC Berkeley policies that govern scenic views, would ensure any impacts to scenic vistas would be *less than significant*.

Significance without Mitigation: Less than significant.

AES-2	The proposed project is in an urbanized area and would not conflict with applicable zoning and other regulations governing scenic quality.
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The EIR Study Area qualifies as an “urban area,” as defined in CEQA Guidelines Section 21094.5, because it is in an incorporated city. The proposed project would result in adverse effects related to scenic quality if it were to conflict with applicable zoning or other regulations governing scenic quality. UC Berkeley is the only agency with land use jurisdiction over programs and projects proposed on UC Berkeley property in the EIR Study Area. Therefore, applicable regulations governing scenic quality include UC Berkeley policies and plans. The proposed LRDP Update would be the overarching planning guideline for UC Berkeley if approved, and it would not conflict with its own regulations governing scenic quality; proposed development projects implemented under the proposed LRDP Update would be required to comply with other UC Berkeley policies and would be subject to design review by UC Berkeley to ensure adherence.

Potential future development projects under the proposed LRDP Update would undergo UC Berkeley design review for consistency with UC Berkeley’s policies governing scenic quality. As described under Section 5.1.1.1, Regulatory Framework, the Physical Design Framework includes principles for preserving significant views, natural areas, and open spaces within the Campus Park and for ensuring projects are informed by the Berkeley Campus Palette and do not conflict with existing styles. Similarly, the New Century Plan, Landscape Master Plan, and Landscape Heritage Plan require the incorporation and enhancement of visual and natural landmarks to maintain the campus image, conform to the related Design Guidelines, and prevent character-defining features of the campus’s historical architectural styles from being subjected to inappropriate alterations. Compliance with UC Berkeley’s policies and planning guidelines, such as the Physical Design Framework, New Century Plan, and Landscape Master Plan, would preserve the scenic quality of much of the campus’s layout and design. In addition to the objectives listed under impact discussion AES-1, the proposed LRDP Update also includes the following relevant objective:

- To the extent feasible, plan campus capital projects adjacent to or within the city environs to respect and enhance the character and livability of surrounding neighborhoods, balanced with the accommodation of the LRDP development program. Consider City of Berkeley plans, to the extent

feasible, for areas surrounding the Campus Park for guidance around proposed uses, land use and sustainability goals, and urban design intent, such as the provision of active ground floor uses that contribute to the public realm.

As part of the proposed project, UC Berkeley and future development projects would implement the aesthetics (AES) CBPs listed here, which have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP AES-1 (Updated):** New projects will as a general rule conform to the Physical Design Framework. While the guidelines in the Physical Design Framework would not preclude alternate design concepts when such concepts present the best solution for a particular site, UC Berkeley will not depart from the Physical Design Framework except for solutions of extraordinary quality.
- **CBP AES-2:** Major new campus projects will continue to be reviewed at each stage of design by the UC Berkeley Design Review Committee. The provisions of the LRDP, as well as project-specific design guidelines prepared for each such project, will guide these reviews.
- **CBP AES-3 (Updated):** To the extent feasible, UC Berkeley will enhance the visual quality of mapped high fire risk zones by focusing fuel management practices that promote landscape resilience, native habitats, and biodiversity.
- **CBP AES-4 (Updated):** UC Berkeley will make informational presentations of major projects in the city environs of the Cities of Berkeley and Oakland, and the Clark Kerr Campus, to the relevant city commission(s) and board(s). Relevant commissions and boards, to be determined jointly by the Campus Architect and appropriate City Planning Director, may include the Berkeley Zoning Adjustments Board and Berkeley Landmarks Preservation Commission. Major projects in the Hill Campus East within the city of Oakland may also be presented to relevant City of Oakland boards or commissions, after consultation and mutual agreement between those agencies and UC Berkeley. Major projects may include new construction or redevelopment projects with substantial community interest as determined by UC Berkeley. Whenever a major project in the city environs or Clark Kerr Campus is under consideration, the Campus Architect may invite the appropriate city planning director or their designee to attend and comment on the project at the UC Berkeley Design Review Committee.
- **CBP AES-5 (Updated):** UC Berkeley will assess each individual project built in the City Environs Properties to determine whether it could pose potential significant aesthetic impacts not anticipated in the LRDP, for projects that are not exempt from aesthetics analysis pursuant to Public Resources Code Section 21099. If the project could pose potential significant aesthetic impacts as noted above, the project would be subject to further evaluation under the California Environmental Quality Act.

These CBPs are designed to reduce impacts to visual resources through the review process for new projects by ensuring adherence to UC Berkeley objectives for preserving important existing visual resources. The implementation of CBP AES-1 through CBP AES-5, and the other CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts to scenic quality, but would rather help reduce impacts to visual resources as part of the design review process. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

While UC Berkeley is constitutionally exempt from local land use regulations, the UC regulations governing scenic quality are similar in their intent to limit the obstruction of scenic resources and ensure quality design by considering the visual quality of potential future development through project-specific design review. Compliance with existing UC Berkeley goals and policies to preserve UC Berkeley's parklike setting and architectural styles that add scenic quality, in addition to the CBPs, would ensure that potential future development under the LRDP Update would not conflict with applicable regulations governing scenic quality, and impacts in this respect would be *less than significant*.

Significance without Mitigation: Less than significant.

AES-3	The project could create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.
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The proposed LRDP Update would increase the UC Berkeley campus's building square footage through various new development, redevelopment, and renovation projects. As listed in Chapter 3, Project Description, the proposed LRDP Update could increase UC Berkeley's building square footage throughout the EIR Study Area from 14,914,957 square feet currently existing, up to 23,011,206 square feet. It can be assumed that this could increase the amount of light generated from the new development overall. Potential development under the proposed LRDP Update would also include some renovation and redevelopment to recreational and athletic spaces, which include lighting for sporting events.

However, because UC Berkeley is in an already urbanized and densely populated area, potential future development would be primarily in the form of infill/intensification on sites already developed and/or underutilized, and future development would have less impact with respect to light and glare than an undeveloped area or isolated parcel away from existing development. Some development would potentially occur in the Hill Campus East, including the construction of additional academic life space, utility infrastructure upgrades, and the potential addition of a solar panel array, as described in Chapter 3, Project Description. Parts of the Hill Campus East are adjacent to residential neighborhoods in the Berkeley Hills. While specific details of most proposed development projects are unknown at this time (other than Housing Projects #1 and #2, which are exempt from aesthetics review), all proposed development would be required to use controls to minimize light spillage and glare in accordance with UC Berkeley's Campus Design Standards. These standards would ensure that light fixtures would include cut-off shields to prevent light trespass and would be downlit for pedestrian and bicycle parking areas, and that, in general, exterior lighting is designed to reduce light pollution and energy consumption while creating a safe and visible campus. In addition, lighting would be required to be designed in accordance with other applicable standards, such as the CBC, which includes standards for light power and brightness, shielding, and sensor controls to reduce light pollution and glare.

As part of the proposed project, UC Berkeley would implement the aesthetics (AES) CBPs listed here:

- **CBP AES-6:** Lighting for new development projects will be designed to include shields and cut-offs that minimize light spillage onto unintended surfaces and minimize atmospheric light pollution. The only exception to this principle will be in those areas where such features would be incompatible with the visual and/or historic character of the area.

- **CBP AES-7:** As part of UC Berkeley’s design review procedures, light and glare will be given specific consideration and measures will be incorporated into the project design to minimize both. In general, exterior surfaces will not be reflective; architectural screens and shading devices are preferable to reflective glass.

These CBPs would ensure that lighting is designed to reduce potential light spillage and glare. The ongoing implementation of CBP AES-6 and CBP AES-7, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional light and glare impacts. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction and short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

While adherence to the most recent applicable UC Berkeley and State standards for reducing substantial light and glare, combined with UC Berkeley’s CBPs and the fact that the increase in development would be unlikely to result in substantial changes in the amount of lighting and glare overall in an already developed, urbanized area, the potential addition of a solar array in the Hill Campus East as proposed under the LRDP Update could result in additional glare depending on location and angle of the solar panels. Since the CBP 6 and CBP 7 pertain to lighting and exterior building design, additional mitigation for the solar array would be needed to reduce potential glare, and impacts would therefore be *significant*.

Impact AES-3: The potential addition of a solar array in the Hill Campus East under the LRDP Update could potentially result in glare that may adversely affect views in the area.

Mitigation Measure AES-3: In the event that UC Berkeley installs a solar array in the Hill Campus East, or elsewhere in the LRDP Planning Area, prior to the installation of the photovoltaic panels the Campus Architect shall review the panel specifications and construction plans to ensure the panels are designed and installed to ensure the following:

- The angle at which panels are installed precludes, or minimizes to the maximum extent practicable, glare observed by viewers on the ground.
- The reflectivity of materials used shall not be greater than the reflectivity of standard materials used in residential and commercial developments.
- The project would not have potential significant glare or reflectivity impacts to viewers on the ground.

Significance with Mitigation: Less than significant.

AES-4	The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to aesthetics.
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As discussed in Chapter 5, Environmental Analysis, of this Draft EIR, the cumulative setting for aesthetics impacts includes potential future development under the proposed project combined with effects of development on lands adjacent to the EIR Study Area. These include projects within the jurisdiction of the cities of Berkeley and Oakland, and the Lawrence Berkeley National Laboratory (LBNL). Potential future development under the proposed LRDP Update would be scattered throughout the EIR Study Area. There would not be a significant overhaul of any one area, and the proposed project is already within a developed, urbanized area. Development would be intended primarily to improve aging infrastructure, accommodate upgrades in technology, support an increased UC Berkeley population, and provide more efficient use of space. As shown in Table 3-2, Potential Areas of New Development and Redevelopment, in Chapter 3, Project Description, of this Draft EIR, some future potential projects may increase building height, which could alter scenic vistas depending on their location, although, as discussed under impact discussion AES-2, scenic views from elevated areas of the East Bay Hills toward the San Francisco Bay would not be substantially impacted.

As described in impact discussions AES-1 through AES-3, potential future development under the proposed LRDP Update would be required to conform to existing UC Berkeley policies that are in place to preserve and enhance significant design features pertaining to scenic vistas and scenic quality, and to reduce light and glare, as well as Mitigation Measure AES-3 to reduce glare in particular from the addition of potential solar arrays in the Hill Campus East. Individual developments would continue to be subject to UC Berkeley requirements related to aesthetics, including project-level design review requirements. Additionally, as part of the approval process, potential new development resulting from implementation of the proposed project would be subject to architectural, environmental, and site design review, as applicable, to ensure that the development is aesthetically pleasing and compatible with adjoining land uses where possible. Similarly, non-UC Berkeley cumulative projects under the jurisdiction of the cities of Berkeley and Oakland would require respective review subject to those relevant City policies pertaining to aesthetics, such as those described in Section 5.1.1.1, Regulatory Framework. These include general plan, specific plan, and municipal code policies and regulations for both cities that ensure compatibility between various developments and preservation of significant scenic features, such as the East Bay hills and San Francisco Bay. LBNL is a federal facility conducting work within the UC system's mission and is exempt from local land use and zoning regulations; it would be required to comply with its own policies pertaining to aesthetics. LBNL projects would also be required to comply with CBC regulations for reducing light pollution and glare by regulating light power and brightness, shielding, and sensor controls.

Since there is limited space in the city of Berkeley for new development, most cumulative projects would be infill, and the overall scenic quality of the urbanized area would be unlikely to be substantially changed by the cumulative development of these projects. With the development review mechanisms in place for both UC Berkeley, City projects, and LBNL projects, approved future development under the proposed project is not anticipated to create substantial impacts to visual resources. Therefore, the existing developed nature

of the cumulative setting, combined with compliance with existing regulations, policies, and plans, would result in *less-than-significant* cumulative impacts to aesthetics.

Significance without Mitigation: Less than significant.

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5.2 AIR QUALITY

This chapter describes the potential air quality impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential air quality impacts, and identifies UC Berkeley's continuing best practices (CBP) and feasible mitigation measures that could mitigate any potentially significant impacts.

This chapter is based on the methodology recommended by the Bay Area Air Quality Management District (BAAQMD or Air District) for plan-level (proposed LRDP Update) and project-level review (Housing Projects #1 and #2). The analysis focuses on air pollution from regional emissions and localized pollutant concentrations from buildout of the proposed project. In this chapter "emissions" refers to the actual quantity of pollutant, measured in pounds per day or tons per year (tpy), and "concentrations" refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm), parts per billion (ppb), or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Criteria air pollutant emissions modeling is included in Appendix C, Air Quality and Greenhouse Gas Emissions Data, of this draft environmental impact report (Draft EIR):

- Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling
- Appendix C2, Housing Project #1 (Anchor House) Air Quality and Greenhouse Gas Modeling
- Appendix C3, Housing Project #2 (People's Park) Air Quality and Greenhouse Gas Modeling

An evaluation of localized health risks is in Appendix D, Health Risk Assessments, of this Draft EIR.

- Appendix D1, LRDP Update Health Risk Assessment
- Appendix D2, Housing Project #1 (Anchor House) Construction Health Risk Assessment
- Appendix D3, Housing Project #2 (People's Park) Construction Health Risk Assessment

5.2.1 ENVIRONMENTAL SETTING

5.2.1.1 AIR POLLUTANTS OF CONCERN

Criteria Air Pollutants

Pollutants emitted into the ambient air by stationary and mobile sources are regulated by the federal Clean Air Act ("National") and California Clean Air Act. The pollutants emitted into the ambient air by stationary and mobile sources are categorized as primary and/or secondary pollutants. Primary air pollutants are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG) also known as volatile organic compounds (VOC), nitrogen oxides (NO_x), sulfur dioxide (SO₂), coarse inhalable particulate matter (PM₁₀), fine inhalable particulate matter (PM_{2.5}), and lead (Pb) are primary air pollutants. Of these, CO, SO₂, nitrogen dioxide (NO₂), PM₁₀, and PM_{2.5} are "criteria air pollutants," which means that ambient air quality standards (AAQS) have been established for them. ROG and NO_x are criteria pollutant precursors that form secondary criteria air pollutants through chemical and photochemical reactions in the atmosphere. Ozone

(O₃) and nitrogen dioxide (NO₂) are the principal secondary pollutants. Each of the primary and secondary criteria air pollutants and its known health effects is described here.

- **Carbon Monoxide (CO)** is a colorless, odorless gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces its oxygen-carrying capacity. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death.¹
- **Nitrogen Oxides (NO_x)** are a by-product of fuel combustion and contribute to the formation of O₃, PM₁₀, and PM_{2.5}. The two major components of NO_x are nitric oxide (NO) and NO₂. The principal component of NO_x produced by combustion is NO, but NO reacts with oxygen to form NO₂, creating the mixture of NO and NO₂ commonly called NO_x. NO₂ absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure.⁵ NO₂ acts as an acute irritant and in equal concentrations is more injurious than NO. At atmospheric concentrations, however, NO₂ is only potentially irritating. There is some indication of a relationship between NO₂ and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 parts per million (ppm).
- **Sulfur Dioxide (SO₂)** is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO₂. When SO₂ forms sulfates (SO₄) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_x). Thus, SO₂ is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO₂ may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO₂ may do greater harm by injuring lung tissue.²
- **Suspended Particulate Matter (PM₁₀ and PM_{2.5})** consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. In the San Francisco Bay Area Air Basin (SFBAAB or Air Basin), most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM₁₀, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 0.0004 inch) or less. Inhalable fine particles, or PM_{2.5}, have an aerodynamic diameter of 2.5 microns or less (i.e., 0.0001 inch). Diesel particulate matter (DPM) is also classified a carcinogen.

Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM₁₀ bypasses the body's natural filtration system more easily than larger particles and can lodge deep in the

¹ Bay Area Air Quality Management District, 2017, Revised California Environmental Quality Act Air Quality Guidelines.

² Bay Area Air Quality Management District, 2017, Revised California Environmental Quality Act Air Quality Guidelines.

lungs. The EPA scientific review concluded that $PM_{2.5}$ penetrates even more deeply into the lungs, and this is more likely to contribute to health effects—at concentrations well below current PM_{10} standards. These health effects include premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). Motor vehicles are currently responsible for about half of particulates in the SFBAAB. Wood burning in fireplaces and stoves is another large source of fine particulates.³

- **Ozone (O_3)** is commonly referred to as “smog” and is a gas that is formed when ROGs and NO_x , both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions to the formation of this pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. O_3 levels usually build up during the day and peak in the afternoon hours. Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. O_3 can also damage plants and trees and materials such as rubber and fabrics.⁴
- **Reactive Organic Gases (ROGs)/ Volatile Organic Compounds (VOCs)** are compounds composed primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of ROGs. Other sources of ROGs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROGs, but rather by reactions of ROGs to form secondary pollutants such as O_3 . There are no AAQS established for ROGs. However, because they contribute to the formation of O_3 , the Air District has established a significance threshold for this pollutant.
- **Lead (Pb)** is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phasing out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. Because emissions of lead are found only in projects that are permitted by the Air District, lead is not an air quality of concern for the proposed project.

Table 5.2-1, Criteria Air Pollutant Health Effects Summary, summarizes the potential health effects associated with the criteria air pollutants.

³ Bay Area Air Quality Management District, 2017, Revised California Environmental Quality Act Air Quality Guidelines.

⁴ Bay Area Air Quality Management District, 2017, Revised California Environmental Quality Act Air Quality Guidelines.

TABLE 5.2-1 CRITERIA AIR POLLUTANT HEALTH EFFECTS SUMMARY

Pollutant	Health Effects	Examples of Sources
Carbon Monoxide (CO)	<ul style="list-style-type: none"> ▪ Chest pain in heart patients ▪ Headaches, nausea ▪ Reduced mental alertness ▪ Death at very high levels 	<ul style="list-style-type: none"> ▪ Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Ozone (O ₃)	<ul style="list-style-type: none"> ▪ Cough, chest tightness ▪ Difficulty taking a deep breath ▪ Worsened asthma symptoms ▪ Lung inflammation 	<ul style="list-style-type: none"> ▪ Atmospheric reaction of organic gases with nitrogen oxides in sunlight
Nitrogen Dioxide (NO ₂)	<ul style="list-style-type: none"> ▪ Increased response to allergens ▪ Aggravation of respiratory illness 	<ul style="list-style-type: none"> ▪ Same as carbon monoxide sources
Particulate Matter (PM ₁₀ & PM _{2.5})	<ul style="list-style-type: none"> ▪ Hospitalizations for worsened heart diseases ▪ Emergency room visits for asthma ▪ Premature death 	<ul style="list-style-type: none"> ▪ Cars and trucks (particularly diesels) ▪ Fireplaces and woodstoves ▪ Windblown dust from overlays, agriculture, and construction
Sulfur Dioxide (SO ₂)	<ul style="list-style-type: none"> ▪ Aggravation of respiratory disease (e.g., asthma and emphysema) ▪ Reduced lung function 	<ul style="list-style-type: none"> ▪ Combustion of sulfur-containing fossil fuels, smelting of sulfur-bearing metal ores, and industrial processes
Lead (Pb)	<ul style="list-style-type: none"> ▪ Behavioral and learning disabilities in children ▪ Nervous system impairment 	<ul style="list-style-type: none"> ▪ Contaminated soil

Sources: California Air Resources Board, 2009, December 2. ARB Fact Sheet: Air Pollution and Health. <https://www.arb.ca.gov/research/health/fs/fs1/fs1.htm> (accessed February 21, 2019).; South Coast Air Quality Management District. 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. <http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf>.

Toxic Air Contaminants

The California Health and Safety Code defines a Toxic Air Contaminant (TAC) as “an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health.” A substance that is listed as a hazardous air pollutant pursuant to Section 112(b) of the federal Clean Air Act (42 US Code Section 7412[b]) is a toxic air contaminant. People exposed to toxic air pollutants at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects. These health effects can include damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory, and other health problems.⁵ CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control measures. The majority of the estimated health risks from TACs can be attributed to relatively few compounds. The most important compounds are particulate matter from diesel-fueled engines.

⁵ United States Environmental Protection Agency, 2019, Health and Environmental Effects of Hazardous Air Pollutants, <https://www.epa.gov/haps/health-and-environmental-effects-hazardous-air-pollutants>.

In 1998, CARB identified DPM as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particles are 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lungs. According to the BAAQMD, PM emitted from diesel engines contributes to more than 85 percent of the cancer risk within the SFBAAB. Cancer risk from TACs is highest near major DPM sources.⁶

5.2.1.2 REGULATORY FRAMEWORK

Federal, State, and local air districts have passed laws and regulations intended to control and enhance air quality. Land use in the city is subject to the rules and regulations imposed by the United States Environmental Protection Agency (USEPA), CARB, the California Environmental Protection Agency, and BAAQMD. As stated in Chapter 3, Project Description, of this Draft EIR, UC Berkeley, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by UC Berkeley that are in furtherance of UC Berkeley's educational purposes. However, for coordination purposes, UC Berkeley may consider aspects of local plans and policies for the communities surrounding the campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts. The regulatory framework that is potentially applicable to the proposed project is summarized in this section.

Federal and State

Ambient air quality standards have been adopted at federal and State levels for criteria air pollutants. In addition, both the federal and State governments regulate the release of TACs. The proposed project is in the SFBAAB and is subject to the rules and regulations imposed by the Air District, the National AAQS adopted by the USEPA, and the California AAQS adopted by the CARB. Federal, State, regional, and local laws, regulations, plans, and guidelines that are potentially applicable to the proposed project are summarized below.

Ambient Air Quality Standards

The Clean Air Act was passed in 1963 by the United States Congress and has been amended several times. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The Clean Air Act allows states to adopt more stringent standards or to include other pollutants. The California Clean Air Act, signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS.

The National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people

⁶ Bay Area Air Quality Management District, 2014, Improving Air Quality & Health in Bay Area Communities, Community Air Risk Evaluation Program Retrospective & Path Forward (2004 to 2013).

already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants, which are shown in Table 5.2-2, Ambient Air Quality Standards for Criteria Pollutants. These pollutants are O₃, NO₂, CO, SO₂, coarse inhalable PM₁₀, PM_{2.5}, and Pb. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

California has also adopted a host of other regulations that reduce criteria pollutant emissions, including:

- Assembly Bill (AB) 1493: Pavley Fuel Efficiency Standards
- Title 20 California Code of Regulations (CCR): Appliance Energy Efficiency Standards
- Title 24, Part 6, CCR: Building Energy Efficiency Standards
- Title 24, Part 11, CCR: Green Building Standards Code

Tanner Air Toxics Act and Air Toxics “Hot Spot” Information and Assessment Act

Public exposure to TACs is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The California Health and Safety Code defines a TAC as “an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health.” A substance that is listed as a hazardous air pollutant pursuant to Section 112(b) of the federal Clean Air Act (42 US Code Section 7412[b]) is a TAC. Under State law, the California Environmental Protection Agency, acting through CARB, is authorized to identify a substance as a TAC if it is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics “Hot Spot” Information and Assessment Act of 1987). The Tanner Air Toxics Act sets up a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an “airborne toxics control measure” for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for 11 TACs that are identified as having no safe threshold.

TABLE 5.2-2 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard ^a	Federal Primary Standard ^b	Major Pollutant Sources
Ozone (O ₃) ^c	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	*	0.030 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	0.14 ppm	
Respirable Coarse Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	20 µg/m ³	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m ³	150 µg/m ³	
Respirable Fine Particulate Matter (PM _{2.5}) ^d	Annual Arithmetic Mean	12 µg/m ³	12 µg/m ³	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m ³	
Lead (Pb)	30-Day Average	1.5 µg/m ³	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	*	1.5 µg/m ³	
	Rolling 3-Month Average	*	0.15 µg/m ³	
Sulfates (SO ₄) ^e	24 hours	25 µg/m ³	*	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo = 0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H ₂ S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.

TABLE 5.2-2 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard ^a	Federal Primary Standard ^b	Major Pollutant Sources
Vinyl Chloride	24 hours	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Notes: ppm: parts per million; µg/m³; micrograms per cubic meter; *Standard has not been established for this pollutant/duration by this entity.

a. California standards for O₃, CO (except 8-hour Lake Tahoe), SO₂ (1 and 24 hour), NO₂, and particulate matter (PM₁₀, PM_{2.5}, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b. National standards (other than O₃, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O₃ standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

c. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

d. On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

e. On June 2, 2010, a new 1-hour SO₂ standard was established and the existing 24-hour and annual primary standards were revoked. The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

Source: California Air Resources Board, 2016, Ambient Air Quality Standards, <https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf>, accessed November 17, 2020.

Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment (HRA), and if specific thresholds are exceeded, are required to communicate the results to the public through notices and public meetings.

CARB has promulgated the following specific rules to limit TAC emissions:

- 13 CCR Chapter 10, Section 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling.
- 13 CCR Chapter 10, Section 2480, Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools.
- 13 CCR Section 2477 and Article 8, Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate.

University of California

The University of California Office of the President's (UCOP) sustainable practice policies and UC Berkeley's Sustainability Plan have air quality emissions co-benefits. The following planning initiatives are also applicable to air quality emissions generated at UC Berkeley (see also Chapter 5.7, Greenhouse Gas Emissions).

UC Sustainable Practices Policy

In 2003, the UCOP adopted a comprehensive policy of detailed guidelines for Green Building Design and Clean Energy Standards (UC Sustainable Practices Policy), including an annual sustainability reporting requirement. This policy has been revised several times. The most recent version became effective in July 2019 and commits the University of California (UC system) to implementing actions intended to minimize the UC system's impact on the environment and reduce its dependence on nonrenewable energy. The policy covers the areas of green building design, clean energy, climate protection, sustainable transportation, sustainable operations, zero waste, sustainable purchasing, sustainable food services, and sustainable water systems (see Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling).⁷

UC Berkeley Sustainability Plan

The UC Berkeley Sustainability Plan (2020 Sustainability Plan) is an update to UC Berkeley's Carbon Neutrality Planning Framework. The UC Berkeley Sustainability Plan guides future work on campus relative to UC Berkeley's carbon neutrality goals. The 2020 Sustainability Plan provides a clear structure to articulate the vision, goals, and corresponding strategies to become more sustainable and align with systemwide UCOP Sustainability Practices Policy Changes (see above). The 2020 Sustainability Plan also integrates UC Berkeley-specific goals that exceed the UCOP policies, including climate and resiliency strategies for the UC Berkeley campus (see Chapter 5.7, Greenhouse Gas Emissions).

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues. Key sections of the design standards relevant to air quality include regulatory requirements in compliance with BAAQMD rules, the Federal Clean Air Act, and the California Health and Safety Code Division 26 through standard best management practices related to demolition, construction, and operational activities, which release emissions of fugitive dust, aerosols, mist, smoke, odors, and gaseous pollutants.

⁷ University of California Office of the President, 2019, Sustainable Practices Policy under the Climate Protection, <https://policy.ucop.edu/doc/3100155/SustainablePractices>.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to air quality as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.2.3, Impact Discussion.

Regional Regulations

Bay Area Air Quality Management District

The BAAQMD is the agency responsible for ensuring that the National and California AAQS are attained and maintained in the SFBAAB. Air quality conditions in the SFBAAB have improved significantly since the BAAQMD was created in 1955.⁸ The BAAQMD prepares air quality management plans (AQMP) to attain ambient air quality standards in the SFBAAB. The BAAQMD prepares ozone attainment plans for the National O₃ standard and clean air plans for the California O₃ standard. The BAAQMD prepares these air quality management plans in coordination with Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) to ensure consistent assumptions about regional growth.

2017 Clean Air Plan

The BAAQMD adopted the 2017 “Clean Air Plan: Spare the Air, Cool the Climate” (2017 Clean Air Plan) on April 19, 2017, making it the most recently adopted comprehensive plan. The 2017 Clean Air Plan incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2017 Clean Air Plan serves as an update to the adopted Bay Area 2010 Clean Air Plan and continues to provide the framework for SFBAAB to achieve attainment of the California and National AAQS. The 2017 Clean Air Plan updates the Bay Area’s ozone plan, which is based on the “all feasible measures” approach to meet the requirements of the California Clean Air Act. It sets a goal of reducing health risk impacts to local communities by 20 percent between 2015 and 2020 and lays the groundwork for reducing GHG emissions in the Bay Area to meet the State’s 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:⁹

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.

⁸ Bay Area Air Quality Management District, 2010 (Revised 2017), Appendix C: Sample Air Quality Setting, in California Environmental Quality Act Air Quality Guidelines.

⁹ Bay Area Air Quality Management District, 2017, April 19, Final 2017 Clean Air Plan, Spare the Air, Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area, <http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans>, accessed on March 18, 2019.

- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.

A multipollutant control strategy was developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, TACs, and GHG from a full range of emission sources. These control measures cover the following sectors: 1) stationary (industrial) sources; 2) transportation; 3) energy; 4) agriculture; 5) natural and working lands; 6) waste management; 7) water; 8) super-GHG pollutants and 9) buildings. The control strategy includes these key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of “super-GHGs” such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (gasoline, diesel, and natural gas).
 - Increase efficiency of the energy and transportation systems.
 - Reduce demand for vehicle travel, and high-carbon goods and services.
- Decarbonize the energy system.
 - Make the electricity supply carbon-free.
 - Electrify the transportation and building sectors.

Community Air Risk Evaluation Program

The BAAQMD Community Air Risk Evaluation program was initiated in 2004 to evaluate and reduce health risks associated with exposure to outdoor TACs in the Bay Area, primarily DPM. The last update to this program was in 2014. Based on findings of the latest report, DPM was found to account for approximately 85 percent of the cancer risk from airborne toxics. Carcinogenic compounds from gasoline-powered cars and light duty trucks were also identified as significant cancer risks: 1,3-butadiene contributed 4 percent of the cancer risk-weighted emissions and benzene contributed 3 percent. Collectively, five compounds—DPM, 1,3-butadiene, benzene, formaldehyde, and acetaldehyde—were found to be responsible for more than 90 percent of the cancer risk attributed to emissions. All of these compounds are associated with emissions from internal combustion engines. The most important sources of cancer risk-weighted emissions were combustion-related sources of DPM, including on-road mobile sources (31 percent), construction equipment (29 percent), and ships and harbor craft (13 percent). Overall, cancer risk from TACs dropped by more than 50 percent between 2005 and 2015, when emissions inputs accounted for State diesel regulations and other reductions.¹⁰

The major contributor to acute and chronic noncancer health effects in the SFBAAB is acrolein (C₃H₄O). Major sources of acrolein are on-road mobile sources and aircraft near freeways and commercial and military airports.¹¹ Currently CARB does not have certified emission factors or an analytical test method for

¹⁰ Bay Area Air Quality Management District, 2014, Improving Air Quality & Health in Bay Area Communities, Community Air Risk Program Retrospective & Path Forward (2004 to 2013), http://www.baaqmd.gov/-/media/Files/Planning%20and%20Research/CARE%20Program/Documents/CARE_Retrospective_April2014.ashx, accessed on March 12, 2019.

¹¹ Bay Area Air Quality Management District, 2006, Community Air Risk Evaluation Program, Phase I Findings and Policy Recommendations Related to Toxic Air Contaminants in the San Francisco Bay Area, <http://www.baaqmd.gov/Divisions/Planning->

- Year 2 to 5 Communities: East Oakland/San Leandro, Eastern San Francisco, the Pittsburg-Bay Point area, San Jose, Tri-Valley, and Vallejo are slated for action in years 2 to 5 of the AB 617 program.¹⁶

¹⁶ BAAQMD. 2019, April 16, San Francisco Bay Area Community Health Protection Program, https://www.baaqmd.gov/-/media/files/ab617-community-health/2019_0325_ab617onepager-pdf.pdf?la=en.

Air District Rules and Regulations

The BAAQMD's Regulation 7, Odorous Substances, places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Odors are also regulated under the BAAQMD Regulation 1, Rule 1-301, Public Nuisance, which states that:

[N]o person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property.

Under the BAAQMD's Rule 1-301, a facility that receives three or more violation notices within a 30-day period can be declared a public nuisance.

Other Air District Regulations

In addition to the plans and programs described above, the BAAQMD administers several specific regulations on various sources of pollutant emissions that would apply to potential future development constructed over the buildout of the proposed LRDP Update, which include but is not limited to::

- Regulation 2, Rule 1, Permits, General Requirements
- Regulation 2, Rule 2, Permits, New Source Review
- Regulation 2, Rule 4, Permits, Emissions Banking
- Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants
- Regulation 2, Rule 6, Permits, Major Facility Review
- Regulation 6, Rule 1, General Requirements
- Regulation 6, Rule 2, Commercial Cooking Equipment
- Regulation 8, Rule 3, Architectural Coatings
- Regulation 8, Rule 4, General Solvent and Surface Coatings Operations
- Regulation 11, Rule 2, Asbestos, Demolition, Renovation and Manufacturing
- Regulation 11, Rule 18, Reduction of Risk from Air Toxic Emissions at Existing Facilities

BAAQMD Regulation 2, Rule 6: Major Facility Review (Title V)

Under BAAQMD's Major Facility Review Program (Title V) large industrial facilities are issued a single comprehensive operating permit that shows all Federal, State, and BAAQMD requirements. The program includes requirements to monitor emissions and make regular reports pursuant to BAAQMD Regulation 2, Rule 6. Key features of the Major Facility Review process include:

- Review of all federal, State, and local air quality requirements that apply to the facility.
- A public notice and USEPA review period. All comments must be addressed before the initial Title V permit is issued or renewed.
- Federally enforceable requirements may also be enforced via citizen lawsuits.
- The USEPA can modify, terminate, or revoke and reissue a permit if necessary.
- Permits must be renewed every five years with the full public notice and USEPA review process.

UC Berkeley's cogeneration plant and stationary sources (i.e., boilers, generators, and paint booth) fall under BAAQMD's Major Facility Review Program. The latest Major Facility Review Permit from BAAQMD was issued on December 23, 2020, and expires on August 30, 2025. Under its Title V Permit, UC Berkeley must procure offsets (i.e., emissions reductions credits) for any cumulative increase of emissions.

Under BAAQMD Regulation 2, Rule 4, Emissions Banking, "banking" of emissions reductions credits is intended to provide a mechanism for sources to obtain offsets under the New Source Review regulations in Regulation 2, Rule 2. Companies can receive emissions reductions credits by introducing new emissions controls, such as upgrading or replacing old equipment, shutting down equipment, upgrading processes and materials, adopting stricter operating guidelines, and adding control equipment to existing sources. These new controls must go beyond the requirements of current regulations and must be real, permanent, quantifiable, and enforceable. Banked credits are permanent and can be used to offset emissions increases from new, permitted projects and traded or sold to other companies for their use.

Metropolitan Transportation Commission

As described in Chapter 5.0, Environmental Analysis, of this Draft EIR, ABAG and MTC are regional planning agencies tasked with coordinating land use and transportation planning in the Bay Area, including development of the Bay Area's Regional Transportation Plan/Sustainable Communities Strategy, known as Plan Bay Area. The 2040 Plan Bay Area was adopted jointly by the ABAG and MTC on July 26, 2017. ABAG and MTC are again in the process of updating Plan Bay Area. As part of the implementing framework, local governments have identified Priority Development Areas (PDA) and Transit Priority Areas (TPA) to focus growth. PDAs are transit-oriented, infill development opportunity areas within existing communities. TPAs are half-mile buffers surrounding major transit stops or terminals. Overall, well over two-thirds of all regional growth projected in the Bay Area by 2040 is allocated in PDAs.¹⁷

Alameda County Transportation Commission

The Alameda County Transportation Commission (Alameda CTC) is the congestion management agency for Alameda County, tasked with developing a comprehensive transportation improvement program among local jurisdictions that will reduce traffic congestion and improve land use decision-making and air quality (see also Chapter 5.15, Transportation). Alameda CTC's latest congestion management program (CMP) is the 2017 CMP. Alameda CTC's countywide transportation model must be consistent with the regional transportation model developed by the MTC with ABAG data. The countywide transportation model is used to help evaluate cumulative transportation impacts of local land use decisions on the CMP system. In addition, Alameda CTC's updated CMP includes multimodal performance measures and trip reduction and transportation demand management strategies consistent with the goals of reducing regional vehicle miles traveled (VMT) in accordance with Senate Bill 375 (SB 375). The 2017 CMP update incorporates several actions identified as next steps in the 2015 CMP and closely aligns the CMP with the 2016 Countywide

¹⁷ Metropolitan Transportation Commission and Association of Bay Area Governments, 2017, Plan Bay Area 2040 Final, <http://2040.planbayarea.org/>.

Transportation Plan, the 2040 Plan Bay Area, and other related efforts and legislative requirements (e.g., AB 32 and SB 375) to better integrate transportation and land use for achieving GHG reductions.¹⁸

5.2.1.3 EXISTING CONDITIONS

San Francisco Bay Area Air Basin

The Air Basin comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties; the southern portion of Sonoma County; and the southwestern portion of Solano County. Air quality in the SFBAAB is determined by natural factors such as topography, meteorology, and climate and by existing air pollution sources and ambient conditions.¹⁹ The following are the natural factors in the SFBAAB that affect air pollution:

- **Meteorology:** The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range²⁰ splits in the Bay Area, creating a western coast gap, the Golden Gate, and an eastern coast gap, the Carquinez Strait, which allows air to flow in and out of the Bay Area and the Central Valley. The climate is dominated by the strength and location of a semipermanent, subtropical high-pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold-water band, resulting in condensation and the presence of fog and stratus clouds along the Northern California coast. In the winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.
- **Wind Patterns:** During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais in Marin County, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San José when it meets the East Bay Hills. Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno Gap.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon, and the sea breeze deepens and increases in velocity while spreading inland. Under normal atmospheric conditions, the air in the lower atmosphere is warmer than the air above it. In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter

¹⁸ Alameda County Transportation Commission, 2017, December, Congestion Management Program, https://www.alamedactc.org/files/managed/Document/22576/2017_Alameda_County_CMP.pdf.

¹⁹ Bay Area Air Quality Management District, 2017, Revised, California Environmental Quality Act Air Quality Guidelines.

²⁰ The Coast Ranges traverses California's west coast from Humboldt County to Santa Barbara County.

stagnation episodes (i.e., conditions where there is little mixing, which occurs when there is a lack of or little wind) are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the SFBAAB.

- **Temperature:** Summertime temperatures in the SFBAAB are determined in large part by the effect of differential heating between land and water surfaces. On summer afternoons, the temperatures at the coast can be 35 degrees Fahrenheit cooler than temperatures 15 to 20 miles inland; at night, this contrast usually decreases to less than 10 degrees Fahrenheit. In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.
- **Precipitation:** The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains (November through March) account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the SFBAAB to another, even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys. During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing (an upward and downward movement of air) are usually high, and thus pollution levels tend to be low (i.e., air pollutants are dispersed more readily into the atmosphere rather than accumulate under stagnant conditions). However, during the winter, frequent dry periods do occur, where mixing and ventilation are low and pollutant levels build up.
- **Wind Circulation:** Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commuter traffic (early morning) and wood-burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants up-valley during the day, and cold air drainage flows move the air mass down-valley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels.
- **Inversions:** An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). There are two types of inversions that occur regularly in the SFBAAB. Elevation inversions²¹ are more common in the summer and fall, and radiation inversions²² are more common during the winter. The highest air pollutant concentrations in the SFBAAB generally occur during inversions.

Attainment Status of the SFBAAB

The AQMP provides the framework for air quality basins to achieve attainment of the State and federal AAQS through the State Implementation Plan. Areas that meet AAQS are classified attainment areas, and

²¹ When the air blows over elevated areas, it is heated as it is compressed into the side of the hill/mountain. When that warm air comes over the top, it is warmer than the cooler air of the valley.

²² During the night, the ground cools off, radiating the heat to the sky.

areas that do not meet these standards are classified nonattainment areas. Severity classifications for O₃ range from marginal, moderate, and serious to severe and extreme.

- **Unclassified:** A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
- **Attainment:** A pollutant is in attainment if the AAQS for that pollutant was not violated at any site in the area during a three-year period.
- **Nonattainment:** A pollutant is in nonattainment if there was at least one violation of an AAQS for that pollutant in the area.
- **Nonattainment/Transitional:** A subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

The attainment status for the SFBAAB is shown in Table 5.2-3, Attainment Status of Criteria Pollutants in the San Francisco Bay Area Air Basin. The SFBAAB is currently designated a nonattainment area for California and National O₃, California and National PM_{2.5}, and California PM₁₀ AAQS.

TABLE 5.2-3 ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SAN FRANCISCO BAY AREA AIR BASIN

Pollutant	State	Federal
Ozone – 1-hour	Nonattainment	Classification revoked (2005)
Ozone – 8-hour	Nonattainment (serious)	Nonattainment (marginal) ^a
PM ₁₀ – 24-hour	Nonattainment	Unclassified/ Attainment ^b
PM _{2.5} – 24-hour	Nonattainment	Nonattainment
CO – 8-hour and 1-hour	Attainment	Attainment
NO ₂ – 1-hour	Attainment	Unclassified
SO ₂ – 24-hour and 1-hour	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	Attainment	Unclassified/Attainment
All others	Unclassified/Attainment	Unclassified/Attainment

a. Severity classification current as of February 13, 2017.

b. In December 2014, US EPA issued final area designations for the 2012 primary annual PM_{2.5} National AAQS. Areas designated “unclassifiable/attainment” must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.

Sources: California Air Resources Board, 2019, August, Area Designations Maps: State and National, <https://ww2.arb.ca.gov/resources/documents/maps-State-and-Federal-area-designations>, accessed on November 17, 2020; Bay Area Air Quality Management District, 2020, Air Quality Standards and Attainment Status, <https://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status>, accessed November 17, 2020.

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of the project area have been documented and measured by the BAAQMD. BAAQMD has 24 permanent monitoring stations located around the Bay Area. The nearest station is the Berkeley Aquatic Park Monitoring Station, which monitors O₃, NO₂, and PM_{2.5}. Data from this monitoring station is summarized in Table 5.2-4, Ambient Air Quality Monitoring Summary. The data show regular violations of the State and federal PM_{2.5} standard.

In recent years, California has been plagued by an unprecedented number of wildfires that have produced dense palls of smoke in the Bay Area. Smoke from wildfires can irritate the eyes and airways, causing coughing, a dry scratchy throat, and irritated sinuses. Elevated particulate matter in the air can trigger wheezing in those who suffer from asthma, emphysema, chronic obstructive pulmonary disease, or other respiratory conditions.²³ The air quality data collected by BAAQMD in Table 5.2-4 include exceptional events, including wildfires.

TABLE 5.2-4 AMBIENT AIR QUALITY MONITORING SUMMARY

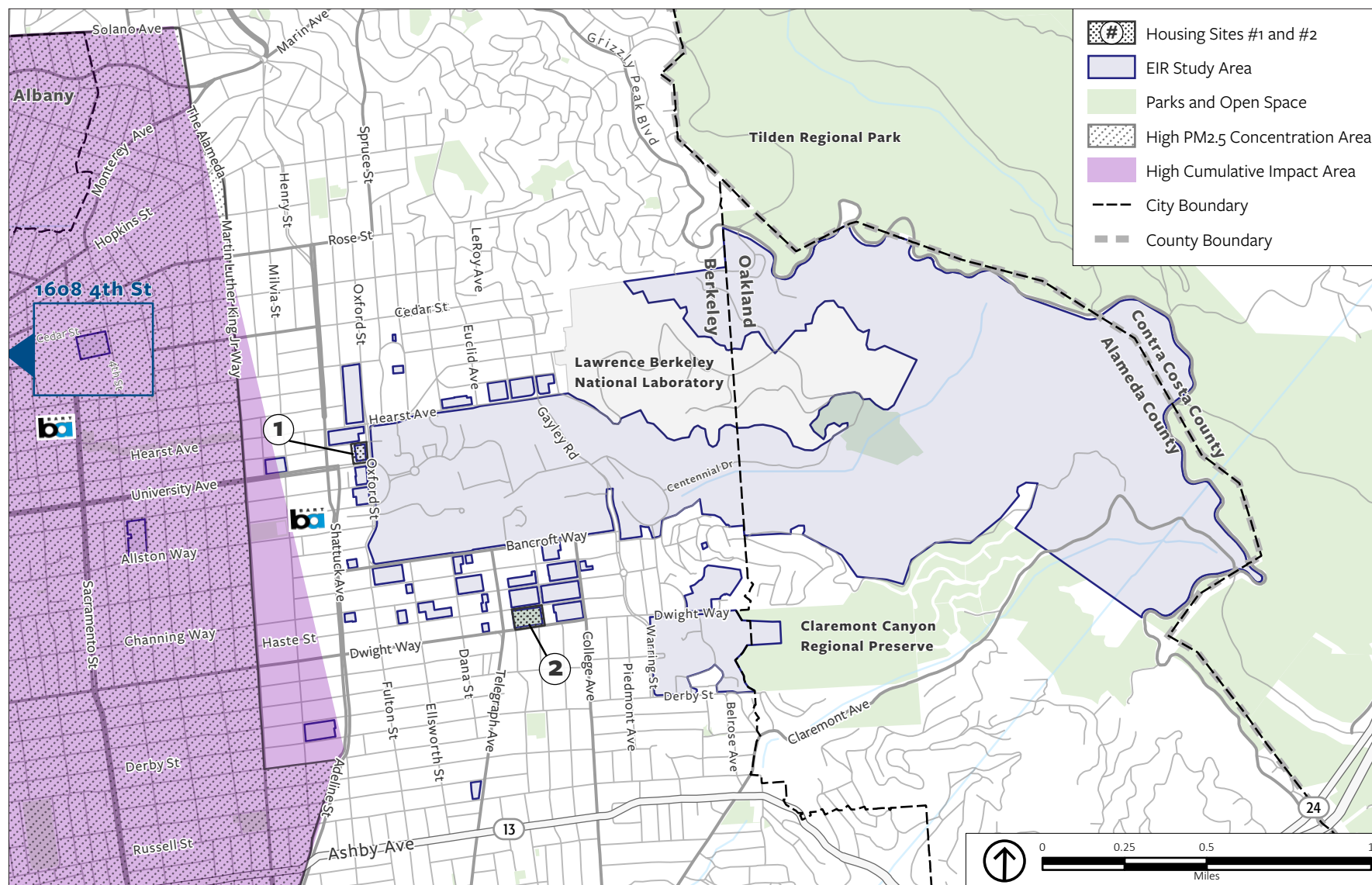
Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels During Such Violations			
	2016	2017	2018	2019
Ozone (O₃)				
State 1-Hour \geq 0.09 ppm	0	0	0	0
State 8-hour \geq 0.07 ppm	0	0	0	0
Federal 8-Hour \geq 0.075 ppm ^c	0	0	0	0
Maximum 1-Hour Conc. (ppm)	0.052	0.058	0.059	0.050
Maximum 8-Hour Conc. (ppm)	0.041	0.049	0.049	0.042
Nitrogen Dioxide (NO₂)				
State 1-Hour \geq 0.18 (ppm)	0	1	0	0
Maximum 1-Hour Conc. (ppb)	49.5	123.3	72.6	49.8
Fine Particulates (PM_{2.5})				
Federal 24-Hour $>$ 35 $\mu\text{g}/\text{m}^3$	0	7	13	0
Maximum 24-Hour Conc. ($\mu\text{g}/\text{m}^3$)	17.3	52.0	165.5	28.8

Notes: ppm = parts per million; ppb = parts per billion; $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter; * = insufficient data; NA = Not Available
Data for O₃, NO₂, and PM_{2.5} was obtained from the Berkeley Aquatic Park Monitoring Station for O₃, NO₂, and PM_{2.5}. Data may include exceptional events (e.g., wildfires).

Source: California Air Resources Board, 2018, Air Pollution Data Monitoring Cards (2014, 2015, 2016, 2017, and 2018), <http://www.arb.ca.gov/adam/index.html>, accessed November 17, 2020.

BAAQMD also provides data that show areas in the SFBAAB that have elevated pollution levels and are identified as “impacted areas.” Based on BAAQMD’s Community Risk Evaluation Program maps, portions of the city of Berkeley are identified as cumulative impact areas; however, the UC Berkeley campus, except for several of the City Environs Properties, is outside of this area (see Figure 5.2-1, BAAQMD Impacted Communities Map). UC Berkeley is also not within an eight-hour ozone exceedance area or PM_{2.5} exceedance area.

²³ Bay Area Air Quality Management District, 2021, Wildfire Safety, <https://www.baaqmd.gov/about-air-quality/wildfire-air-quality-response-program/wildfire-safety>.



Source: ABAG/MTC, 2017; Alameda County, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Figure 5.2-1
BAAQMD Impacted Communities Map

Existing Emissions

LRDP Update

Table 5.2-5, UC Berkeley 2018 Criteria Air Pollutant Emissions, summarizes the criteria air pollutant inventory for the UC Berkeley campus for 2018. Emissions from the cogeneration and fuel use for boilers and emergency generators are permitted sources of emissions regulated by the BAAQMD.

TABLE 5.2-5 UC BERKELEY 2018 CRITERIA AIR POLLUTANT EMISSIONS

Sector	Average Pounds per Day			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Cogeneration Plant ^a	34	303	48	48
Fuel Use ^a	3	58	4	4
Campus Fleet ^a	1	3	<1	<1
Student Commute ^b	5	13	6	2
Faculty and Staff Commute ^b	17	45	20	8
Visitors ^b	4	10	4	2
Vendors ^b	<1	1	<1	<1
Consumer Products / Coatings ^c	324	—	—	—
Total	388	432	82	65

	Tons per Year			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Annual Emissions	70	76	14	11

Notes:

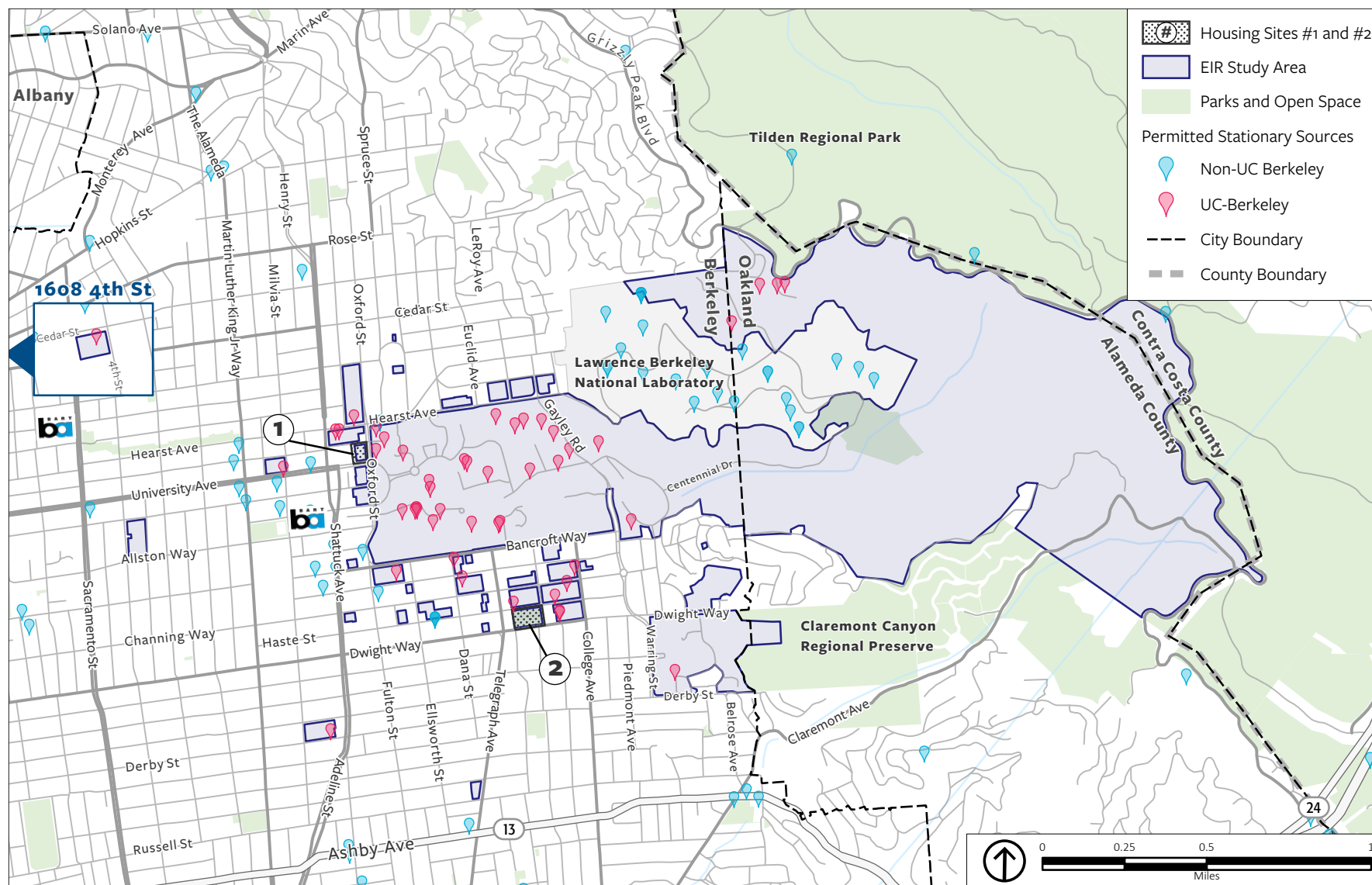
a. Fuel use provided by UC Berkeley based on the GHG emissions inventory. Cogeneration plant emissions are based on reported data. The cogeneration plant is regulated directly by BAAQMD. Fuel use emissions includes fuel from off-road equipment, boilers and emergency generators, and are based on annual fuel use provided by UC Berkeley and the US EPA's AP 42 emissions factors. Campus Fleet fuel use emissions for criteria air pollutants are based on EMFAC2017.

b. Transportation sector emissions are based on VMT provided by Fehr & Peers and modeled using EMFAC2017.

c. Consumer product use and recoating VOC emissions are based on the emissions factors from the CalEEMod User's Guide.

Source: PlaceWorks, 2020.

Point sources of emissions (also referred to as stationary source emissions) at the UC Berkeley campus are identified in Figure 5.2-2, UC Berkeley Permitted Sources of Emissions. Permitted stationary source emissions generate criteria air pollutant emissions and TACs from combustion of fuel at the cogeneration plant, boilers, and emergency generators. Additional TAC emission sources that do not require BAAQMD permitting include evaporative emissions of chemicals used or handled in laboratories and at the Hazardous Materials Facility (HMF).



Source: Alameda County, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Figure 5.2-2
UC Berkeley Permitted Sources of Emissions

The following existing emission sources were included in the health risk evaluation:

- Laboratory emissions from 37 existing buildings.
- 58 existing emergency generators (diesel-fueled engines): 32 on campus, 6 in the Hill Campus East and the Hill Campus West, 19 in the City Environs Properties, 1 in the Clark Kerr Campus.
- Cogeneration plant (natural gas combustion turbine, duct burner).
- Three central plant boilers (natural gas combustion).
- One natural-gas boiler at the Clark Kerr Campus.
- Hazardous Materials Facility (fume hood emissions from bulking operations).

The health risks associated with existing emission sources were determined as part of the “LRDP Update Health Risk Assessment.”²⁴ Figure 5.2-3, Existing Residential (30-Year) Cancer Risk Contours, depicts the cancer risks in cases per million associated with existing permitted sources and nonpermitted sources at UC Berkeley, based on a 30-year residential exposure. Figure 5.2-3 depicts two areas where the excess cancer risk from existing emission sources exceeds one chance per million (i.e., areas within the 1.0 cancer risk contour lines) and one area where the excess cancer risk exceeds ten chances per million (i.e., area within the 10.0 in a million contour line).

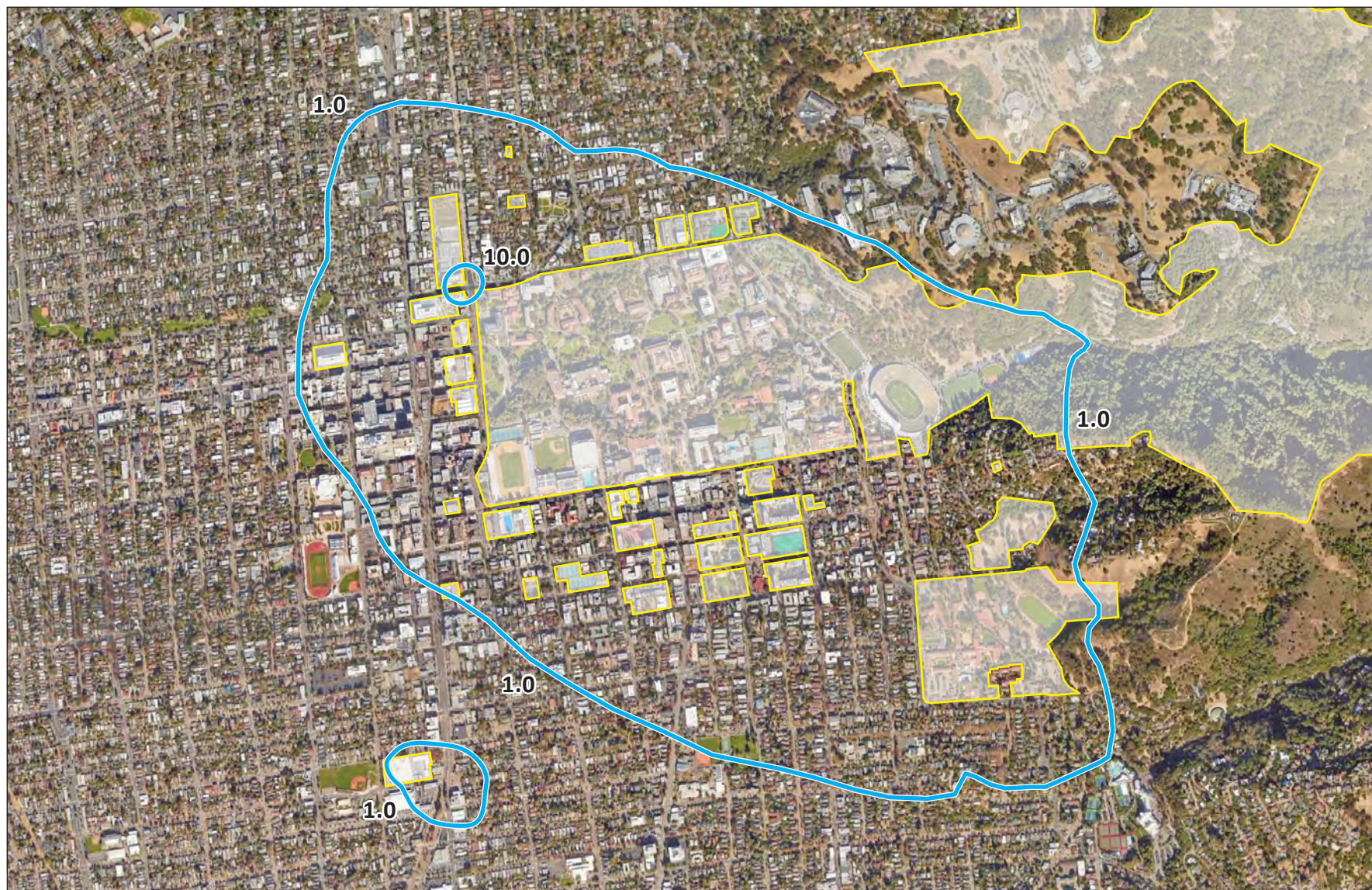
Housing Project #1

The 0.92-acre project site is occupied by surface parking, UC Berkeley office space, eight apartments with eight residential units (16 beds), UC Berkeley’s shuttle maintenance garage, and vacant commercial buildings. UC Berkeley’s shuttle garage, referred to as Oxford Garage, is on the northeastern corner of the site and was built in 1930. Existing emissions from the Housing Project #1 site include area emissions from sources such as limited landscaping equipment and consumer cleaning products, and energy use emissions from heating and cooking. Other existing emissions include mobile-source emissions from vehicle trips.

Housing Project #2

The 2.8-acre project site is in an urbanized area that has for the last several decades been used as an informal park. Current uses on-site include gardens and lawn space, a paved basketball court, picnic tables, a small wooden stage, and a public restroom building. At the time of the preparation of this EIR, the site was primarily occupied by people without housing (homeless) in multiple encampments—from single sleeping bags and small tents to large tents and makeshift tarps/tents. Existing emissions associated with the project site includes landscaping equipment and limited mobile-source emissions from vehicle trips as there is no on-site parking.

²⁴ The health risk assessment methodology is further described in Section 5.2.3.1, Methodology, and the use of the 10 in a million cancer risk threshold is described in Section 5.2.2, Standards of Significance. Appendix D1, LRDP Update Health Risk Assessment, of this Draft EIR includes details on the existing emissions calculations, air dispersion modeling, and risk characterization methodology.



Source: PlaceWorks, 2021.

Note: Risks expressed as chances per million



Figure 5.2-3
Existing Residential (30-Year) Cancer Risk Contours

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases. Disadvantaged communities identified in CalEnviroScreen 3.0 (i.e., environmental justice communities) may be disproportionately affected by and vulnerable to poor air quality (see Figure 5.2-4, CalEnviroScreen 3.0 Cumulative Score by Percentile).²⁵ The CalEnviroScreen cumulative score is a cumulative measure of overall environmental justice burden based on 24 indicators—including pollution, social, and health indicators—four of which specifically have to do with air quality or air pollution. As identified on Figure 5.2-4, much of the UC Berkeley campus and City Environs Properties, including the sites for Housing Projects #1 and #2, are outside of CalEnviroScreen areas that are disproportionately affected by poor air quality.

Residential areas are also considered sensitive receptors to air pollution because residents (particularly children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, since the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the population.

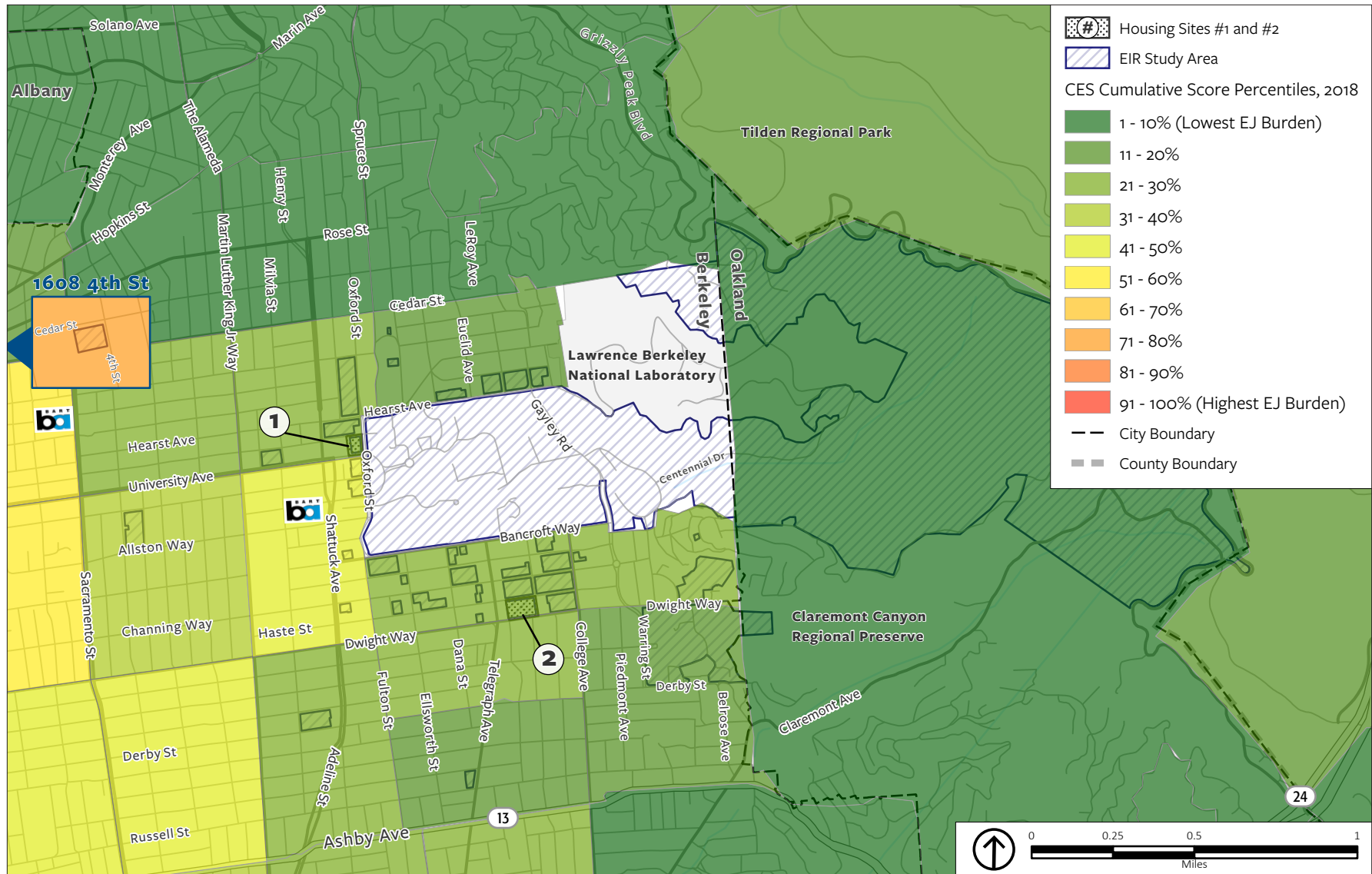
LRDP Update

The UC Berkeley campus is surrounded by sensitive receptors on and off campus. Off-campus sensitive receptors are shown in Figure 5.2-5, UC Berkeley Off-Campus Sensitive Receptor Locations, and are primarily found on the western portion of the Campus Park because the eastern portion of the campus abuts the less developed East Bay hills. UC Berkeley also operates five child development centers (CDC) on or near the UC Berkeley campus (Dwight Way CDC, Haste Street CDC, Clark Kerr Campus CDC, University Village Albany CDC, and Harold E. Jones Child Study Center).

Housing Project #1

Receptors that are sensitive to air pollutants (sensitive receptors) that are within 1,000 feet of the Housing Project #1 site are primarily to the northwest and northeast of the site. The nearest sensitive receptors to the Housing Project #1 site are the existing multifamily residential units immediately north of the site on Berkeley Way and a new residential project (Modera Acheson Commons) that is currently under construction located across Walnut Street to the west of the site. (see Figure 5.2-7, Project Site and Off-Site Receptor Locations of Housing Project #1 Construction HRA, shown in impact discussion AIR-3)

²⁵ Under Senate Bill 535, disadvantaged communities are defined as the top 25 percent scoring areas from CalEnviroScreen along with other areas with high amounts of pollution and low populations.

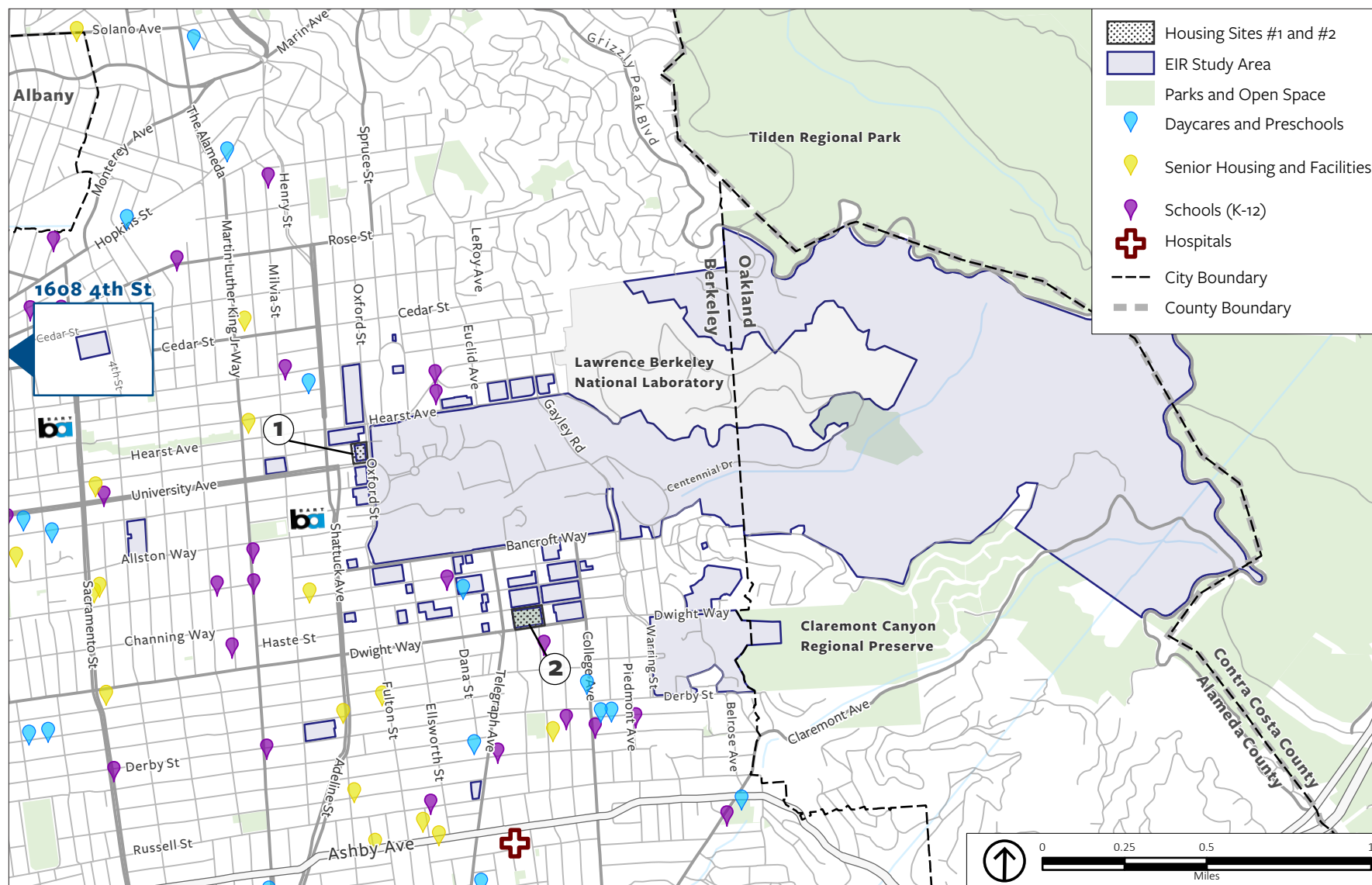


Source: Alameda County, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Note: Census tracts without CalEnviroScreen scores (unshaded) indicate low pollution and low residential population.

Figure 5-2-4

CalEnviroScreen 3.0 Cumulative Score by Percentile



Source: Alameda County, 2019; GooglePlaces API, 2020; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Figure 5.2-5

Note: All residential areas are also considered to be sensitive land uses.

UC Berkeley Off-Campus Sensitive Receptor Locations

Housing Project #2

The closest sensitive receptor to Housing Project #2 is a multifamily building along the western project site boundary. Other nearby sensitive receptors include the residential uses south of the project site along Dwight Way, and UC Berkeley's Maximino Martinez Commons building north of the project site along Haste Street. Other sensitive receptors within 1,000 feet of the site are the Berkeley Rose Waldorf School south of the project site along Hillegass Avenue and the Cornerstone Children's Center northwest of the project site at the intersection of Dana Street and Channing Way. (see Figure 5.2-8, Project Site and Off-Site Receptor Locations of Housing Project #2 Construction HRA, shown in impact discussion AIR-3)

5.2.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant air quality impact if it would:

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
3. Expose sensitive receptors to substantial pollutant concentrations.
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
5. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

BAAQMD Air Quality CEQA Guidelines

As described earlier in this chapter, this analysis is based on the methodology recommended by the BAAQMD. The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area; provide recommended procedures for evaluating potential air quality impacts during the environmental review process, consistent with CEQA requirements; and include recommended numeric thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and GHG emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Air Quality Guidelines. These thresholds are designed to establish the level at which the BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA.

In May 2011, the updated BAAQMD CEQA Air Quality Guidelines were amended to include a risk and hazards threshold for new receptors and modified procedures for assessing impacts related to risk and hazard impacts; however, the amendment regarding risk and hazards was the subject of a December 17, 2015, California Supreme Court decision (*California Building Industry Association v BAAQMD*) that clarified that

CEQA does not require an evaluation of impacts of the environment on a project.²⁶ The court also found that CEQA requires the analysis of exposing people to environmental hazards in specific circumstances, including the location of development near airports, schools near sources of toxic contamination, and certain exemptions for infill and workforce housing. The court also held that public agencies remain free to conduct this analysis regardless of whether it is required by CEQA. To account for these updates, BAAQMD published a new version of the Guidelines, dated May 2017, that includes revisions made to address the California Supreme Court's opinion. This latest version of the BAAQMD CEQA Guidelines was used to prepare the analysis in this EIR.

Criteria Air Pollutant Emissions and Precursors

Regional Significance Criteria

The BAAQMD's construction and operational phase project-level significance criteria are shown in Table 5.2-6, BAAQMD Regional (Mass Emissions) Criteria Air Pollutant Significance Thresholds.

TABLE 5.2-6 BAAQMD REGIONAL (MASS EMISSIONS) CRITERIA AIR POLLUTANT SIGNIFICANCE THRESHOLDS

Pollutant	Construction Phase	Operational Phase	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10
NO _x	54	54	10
PM ₁₀	82 (Exhaust)	82	15
PM _{2.5}	54 (Exhaust)	54	10
PM ₁₀ and PM _{2.5} Fugitive Dust	Best Management Practices	None	None

Notes: pounds per day = lbs/day

Source: Bay Area Air Quality Management District, 2017, CEQA Guidelines May 2017.

²⁶ On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. The court did not rule on the merits of the thresholds of significance, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD complied with CEQA. Following the court's order, the BAAQMD released revised CEQA Air Quality Guidelines in May of 2012 that include guidance on calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, and which set aside the significance thresholds. The Alameda County Superior Court, in ordering BAAQMD to set aside the thresholds, did not address the merits of the science or evidence supporting the thresholds, and in light of the subsequent case history discussed below, the science and reasoning in the BAAQMD 2017 CEQA Air Quality Guidelines provide the latest state-of-the-art guidance available. On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD's CEQA Guidelines. (*California Building Industry Association versus BAAQMD*, Case Nos. A135335 and A136212 (Court of Appeal, First District, August 13, 2013)).

Health Outcomes Associated with the Regional Significance Thresholds

BAAQMD is the primary agency responsible for ensuring the health and welfare of sensitive individuals exposed to elevated concentrations of air pollutants in the SFBAAB and has established thresholds that would be protective of these individuals. To achieve the health-based standards established by the USEPA, BAAQMD prepares the Clean Air Plan that details regional programs to attain the AAQS. Mass emissions in Table 5.2-6, BAAQMD Regional (Mass Emissions) Criteria Air Pollutant Significance Thresholds, are not correlated with concentrations of air pollutants but contribute to the cumulative air quality impacts in the SFBAAB. The thresholds are based on the trigger levels for the federal New Source Review Program. This program was created to ensure projects are consistent with attainment of health-based federal AAQS. Regional emissions from one project do not single-handedly trigger a regional health impact, and it is speculative to identify how many more individuals in the SFBAAB would experience health effects. Projects that do not exceed the BAAQMD regional significance thresholds in Table 5.2-6 would not violate any air quality standards or contribute substantially to an existing or projected air quality violation.

If projects exceed the emissions in Table 5.2-6, emissions would cumulatively contribute to the nonattainment status and would contribute to elevating health effects of these criteria air pollutants. Known health effects related to ozone include worsening of bronchitis, asthma, and emphysema and a decrease in lung function. Health effects associated with particulate matter include premature death of people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, decreased lung function, and increased respiratory symptoms. Reducing emissions would further contribute to reducing possible health effects related to criteria air pollutants. However, for projects that exceed the emissions in Table 5.2-6 it is speculative to determine how exceeding the regional thresholds would affect the number of days the region is in nonattainment because mass emissions are not correlated with concentrations of emissions.

BAAQMD has not provided methodology to assess the specific correlation between mass emissions generated and the effect on health in order to address the issue raised in *Sierra Club v. County of Fresno* (Friant Ranch, L.P.) (2018) 6 Cal.5th 502, Case No. S21978.

- Ozone concentrations depend on many complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns.
- Because of the complexities of predicting ground-level ozone concentrations in relation to the National AAQS and California AAQS, model results from the incremental increase in emissions generated by an individual project are not regionally substantial in scale to effect PM and ozone concentrations, and therefore, changes in associated health effects.
- In addition, many projects may have emissions that are less than the uncertainty level of regional air quality models, and in these cases, quantitative results will not be meaningful.
- Lastly, air pollution is only one potential contributor to the overall health outcomes. Health is also affected by medical care, genetics, behavior, and social factors.

Therefore, on a project-level identifying the incremental number of health incidences is considered speculative (see also Appendix C1). However, if a project in the Bay Area exceeds the regional significance

thresholds, the project could contribute to an increase in health effects in the basin until the attainment standards are met in the SFBAAB.

CO Hotspots

Congested intersections have the potential to create elevated concentrations of CO, referred to as CO hotspots. The significance criteria for CO hotspots are based on the California AAQS for CO, which are 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology, the SFBAAB is in attainment of the California and National AAQS, and CO concentrations in the SFBAAB have steadily declined. Because CO concentrations have improved, the BAAQMD does not require a CO hotspot analysis if the following criteria are met:

- The project is consistent with an applicable congestion management program established by the County Congestion Management Agency for designated roads or highways, the regional transportation plan, and local congestion management agency plans.
- The project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Community Risk and Hazards

Local community risk and hazard impacts are associated with TACs and PM_{2.5} because emissions of these pollutants can have significant health impacts at the local level. The proposed LRDP Update would generate TACs and PM_{2.5} during operations (central plant operations, research laboratories, generators, etc.) and during construction activities that could elevate concentrations of air pollutants at nearby sensitive receptors. The thresholds for construction-related local community risk and hazard impacts are the same as for project operations. The BAAQMD has adopted screening tables for air toxics evaluation during construction.²⁷ Project-level TAC and PM_{2.5} impacts should be addressed on a case-by-case basis, taking into consideration the specific operational- or construction-related characteristics of each project and proximity to off-site receptors, as applicable.²⁸

Community Risk and Hazards: Project

Project-level emissions of TACs or PM_{2.5} from individual sources that exceed any of the thresholds listed below are considered a potentially significant community health risk:

- An excess cancer risk level of more than 10 in a million, or a noncancer (i.e., chronic or acute) hazard index greater than 1.0 would be a significant project contribution.

²⁷ Bay Area Air Quality Management District, 2010, Screening Tables for Air Toxics Evaluations during Construction.

²⁸ Bay Area Air Quality Management District, 2017, Revised, California Environmental Quality Act Air Quality Guidelines, http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf, accessed on October 25, 2018.

- An incremental increase of greater than 0.3 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) annual average $\text{PM}_{2.5}$ from a single source would be a significant project contribution.²⁹

Community Risk and Hazards: Cumulative

Cumulative sources represent the combined total risk values of individual sources within a 1,000-foot evaluation zone. A project would have a cumulative considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of a source or location of a receptor, plus the contribution from the project, exceeds any of the following:

- An excess cancer risk level of more than 100 in a million or a chronic noncancer hazard index (from all local sources) greater than 10.0.
- $0.8 \mu\text{g}/\text{m}^3$ annual average $\text{PM}_{2.5}$.³⁰

In February 2015, Office of Environmental Health Hazard Assessment (OEHHA) adopted new health risk assessment guidance that includes several efforts to be more protective of children's health. These updated procedures include the use of age sensitivity factors to account for the higher sensitivity of infants and young children to cancer causing chemicals, and age-specific breathing rate.³¹

Odors

BAAQMD's thresholds for odors are qualitative based on BAAQMD's Regulation 7, Odorous Substances. This rule places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Odors are also regulated under BAAQMD Regulation 1, Rule 1-301, Public Nuisance, which states that no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health, or safety of any such persons or the public, or which cause, or has a natural tendency to cause, injury, or damage to business or property. Under BAAQMD's Rule 1-301, BAAQMD has established odor screening thresholds for land uses that have the potential to generate substantial odor complaints, including wastewater treatment plants, landfills or transfer stations, composting facilities, confined animal facilities, food manufacturing, and chemical plants.³² For a plan-level analysis, BAAQMD requires the identification of potential existing and planned location of odors sources and policies to reduce odors.

²⁹ Bay Area Air Quality Management District, 2017, Revised, California Environmental Quality Act Air Quality Guidelines. http://www.baaqmd.gov/-/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf, accessed on October 25, 2018.

³⁰ Bay Area Air Quality Management District, 2017, Revised, California Environmental Quality Act Air Quality Guidelines. http://www.baaqmd.gov/-/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf, accessed October 25, 2018.

³¹ Office of Environmental Health Hazard Assessment, 2015, February, Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.

³² Bay Area Air Quality Management District, 2017, May, California Environmental Quality Act Air Quality Guidelines. http://www.baaqmd.gov/-/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf, accessed October 25, 2018.

5.2.3 IMPACT DISCUSSION

5.2.3.1 METHODOLOGY

LRDP Update

Operation

Year 2018 criteria air pollutant emissions were based on activity data provided by UC Berkeley as part of the annual reporting it conducts for the GHG emissions inventory, transportation emissions based on data provided by Fehr & Peers and modeled using CARB's EMFAC2017 emissions program, and emissions factors from the California Emissions Estimator Model (CalEEMod) User's Guide. Table 5.2-7, Criteria Air Pollutant Emissions Forecast Analysis Methodology, summarizes the methodology used to estimate existing emissions and how emissions were forecast for the business-as-usual (BAU) scenario. Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling, of this Draft EIR includes additional information on the modeling assumptions.

TABLE 5.2-7 CRITERIA AIR POLLUTANT EMISSIONS FORECAST ANALYSIS METHODOLOGY

Sector	Existing 2018	2036 LRDP Forecast Analysis Methodology
Cogeneration Plant/Boiler	Based on fuel use provided by UC Berkeley	The cogeneration plant fuel use is based on the 2020 Campus Energy Plan BAU design option.
Campus Fleet	Based on fuel use provided by UC Berkeley	Campus fleet fuel use and associated VMT is assumed to grow proportional to the increase in faculty and staff.
Fuel Use	Based on fuel use provided by UC Berkeley	Fuel use for emergency generators, boilers, off-road equipment, and other <i>de minimus</i> sources are assumed to grow proportional to the increase in total square footage (excludes parking garages).
Faculty and Staff Commute Student Commute Visitors Vendors	Based on VMT provided by Fehr and Peers and modeled using EMFAC2017	LRDP 2036 VMT provided by Fehr and Peers and modeled using EMFAC2017.
Consumer Products / Painting	Based on existing building square footage and the emissions factors from the CalEEMod User's Guide.	Consumer product use and architectural coatings from repainting are forecast based on the increase in residential and nonresidential building square footage.

Sources: PlaceWorks; Fehr & Peers, 2020.

UC Berkeley Sustainability Plan Reductions

Measures have been identified by UC Berkeley and the UCOP that would reduce the UC Berkeley campus emissions and have been accounted for as part of the UC Berkeley 2036 forecast for the "with Sustainability Plan" scenario.

- **Carbon neutral fleet by end of calendar year 2025.** In 2018 UC Berkeley fleet included use of gasoline- and diesel-powered vehicles. The 2036 forecast includes use of electric vehicles for the fleet in order to be consistent with this goal.
- **Develop an actionable plan to decarbonize the main campus energy system.** To assess options to improve or replace the cogeneration plant, UC Berkeley commissioned a study in 2019. The 2020 Campus Energy Plan identified several options for replacing and/or upgrading the cogeneration plant. The 2036 baseline scenario is based on the BAU scenario (Scenario o), which assumes maintenance and equipment replacement. Replacement of the cogeneration plant (2020 Campus Energy Plan Option 2) would not meet the UC Berkeley carbon neutrality initiatives; therefore, the reductions from this scenario are not considered in the “with Sustainability Plan” scenario. The “with Sustainability Plan” scenario considers both the Central Steam Plant option that uses renewable sources of electricity rather than natural gas (2020 Campus Energy Plan Option 10C) and the Hybrid Nodal Heat Recover that would provide energy resilience during power outages (2020 Campus Energy Plan Option 12). GHG reductions associated with these potential Campus Energy Plan options are in Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling. However, the “with Sustainability Plan” uses Option 12 as a reasonable worst-case scenario.

Construction

Specific details regarding year of construction or phasing of construction for the improvements identified in the proposed LRDP Update are not currently available to perform a full quantitative assessment (see Table 3-2, Potential Areas of New Development and Redevelopment). BAAQMD Guidelines do not provide a specific methodology for assessing construction-related impacts at the plan level. Therefore, this analysis is qualitative, but considers the quantitative results of Housing Projects #1 and #2, because they are examples of individual projects under the proposed LRDP Update in the near-term and have actual construction equipment estimates.

UC Berkeley Stationary Sources Health Risk Assessment

Appendix D1, LRDP Update Health Risk Assessment, of this Draft EIR includes details on the emissions calculations, air dispersion modeling, and risk characterization methodology.

Emission Sources

The existing (2018) emission sources are described in Section 5.2.1.3, Existing Conditions. The following emission sources were evaluated as part of the proposed LRDP Update.

- Laboratory emissions from 12 new buildings and/or renovations to existing buildings
- 7 new diesel-fueled emergency generators
- Continued use of the existing cogeneration plant (natural gas combustion turbine, duct burner, and three boilers) under the BAU scenario (worst-case scenario for TAC emissions)
- Continued operation of the natural-gas boiler at the Clark Kerr Campus
- Continued operation of the HMF

The following emission sources were excluded from the HRA due to insignificant impact:³³

- Campuswide painting and solvent cleaning operations
- Natural-gas boilers less than 10 MMBTU/hr (million British thermal units per hour)

Emergency Generators. A list of existing and proposed new diesel-fueled emergency generators was provided by UC Berkeley. Emergency generator DPM emissions were estimated based on the expected annual testing frequency of 30 minutes twice per month, plus one-hour load bank testing once per year (13 hours total per year). Emission factors for generators (grams per brake horsepower per hour [g/bhp-hr]) are based on the make, model/engine year, and size (bhp) of the engine.

Laboratory Emissions. Laboratory emissions were estimated using emission factors developed by UC Berkeley, as described in previous UC Berkeley HRAs and by other universities in the UC system.^{34, 35} These emission factors were based on a campuswide chemical inventory by laboratory building. Chemicals were evaluated for emission factor development, taking many factors into account, including emissions potential (based on physical state and vapor pressure), inventory quantities, and relative airborne toxicity. After ruling out chemicals with low emissions potential, chemicals were ranked by inventory quantities and relative toxicity. Chemicals with low to moderate toxicity but used in high quantities, such as isopropanol, were included, as were chemicals with higher toxicity. All laboratories were categorized into three different types:

- Lab Type I—Chemistry and Chemical Engineering
- Lab Type II—General Biological Sciences
- Lab Type III—Physical Sciences/Other (Engineering, Geology, Physics, etc.)

The total emission quantities of each chemical on both a maximum hourly and annual average basis were summed for each lab type across all buildings and then divided by the campuswide total square footage of wet laboratory space for each lab type. This provided a set of laboratory emission factors by chemical for each lab type, expressed as grams per second emissions per square foot of wet laboratory space (g/s per ft²).

Wet laboratory (lab using chemicals) space was determined from review of previous UC Berkeley HRAs, where feasible. For buildings not previously evaluated, wet lab square footage was estimated as the total “Research Laboratory and Studio” square footage provided by UC Berkeley. For existing buildings undergoing renovation through the proposed LRDP Update, wet lab space was estimated based on the percentage increase or decrease in total proposed building square footage compared to the existing building square footage.

³³ Health risks from these emission sources would not impact the significance conclusions. Based on review of the 2003 Central Campus Health Risk Assessment (HRA) for existing LRDP and 2009 HRA Update for UC Berkeley, the campuswide painting and solvent operations contributes 0.5 percent or less of the total health risks. Small natural-gas boilers (< 10 MMBTU/hr) were not included in previous Central Campus HRAs (2000 and 2003) due to insignificant health risks compared to larger natural gas combustion equipment.

³⁴ University of California, Berkeley, 2003, Central Campus Health Risk Assessment for 2020 LRDP Draft EIR.

³⁵ ERM West, Inc., 2009, Health Risk Assessment Update for University of California, Berkeley.

Cogeneration Plant and Boilers. UC Berkeley provided 2018 fuel-use data (natural gas). Emission factors for turbines and boilers are from BAAQMD.³⁶ Maximum hourly emissions were based on the rated capacities of each unit.

- Central Plant Turbine: 243 MMBTU/hr
- Central Plant Duct Burner: 84 MMBTU/hr
- Central Plant Boilers: 137 MMBTU/hr; two at 135 MMBTU/hr
- Clark Kerr Boiler: 10.5 MMBTU/hr

The 2020 Campus Energy Plan identified several options for replacing and/or upgrading the cogeneration plant at the UC Berkeley campus. This BAU scenario (Scenario o) assumes maintenance and equipment replacement. Replacement of the cogeneration plant (2020 Campus Energy Plan Option 2) would not meet the UC Berkeley carbon neutrality initiatives, and the reductions from this scenario are not considered in the “with Sustainability Plan” scenario. The “with Sustainability Plan” scenario considers both the Central Steam Plant option that uses renewable sources of electricity rather than natural gas (2020 Campus Energy Plan Option 10C) and the Hybrid Nodal Heat Recover that would provide energy resilience during power outages (2020 Campus Energy Plan Option 12). All other options under the 2020 Campus Energy Plan would result in a reduction in natural gas combustion compared to the BAU scenario.

Under the BAU scenario, annual turbine and duct burner operations were assumed similar to the existing year. Current permit conditions limit operation of the three Central Plant boilers to less than 10 percent of their rated capacity.³⁷ Therefore, future annual average central plant boiler emissions were assumed based on the boilers operating at 10 percent of their capacity. Maximum hourly operations assume all units are operating simultaneously at full load. For the boiler at the Clark Kerr Campus, emissions associated with the proposed LRDP Update were assumed the same as existing emissions.

Hazardous Materials Facility. The HMF emissions methodology used in the 2000 and 2003 Central Campus HRAs was used to determine the existing (2018) and future emissions of the proposed LRDP Update. Emissions occur during weekly bulk pouring operations of laboratory waste chemicals, which are on average four hours per week. The existing emissions are based on USEPA fugitive emissions for solvent storage and handling and bulk pouring information provided by UC Berkeley.³⁸ The HMF emissions associated with the proposed LRDP Update are based on an approximately 48 percent increase in wet lab space—from 742,759 square feet (existing) to 1,099,036 square feet (total with proposed LRDP Update).

Air Dispersion Modeling

Air dispersion modeling was performed using the AERMOD atmospheric dispersion model (Lakes AERMOD View, version 9.9.0). The model is a steady-state Gaussian plume model and is approved by BAAQMD for

³⁶ Bay Area Air Quality Management District, 2020, Toxic Air Contaminant (TAC) Emission Factor Guidelines, Appendix A, Default TAC Emission Factors for Specific Source Categories, dated August 2020.

³⁷ Bay Area Air Quality Management District, 2020, Major Facility Review Permit, issued to University of California, Berkeley Facility #A0059 on August 31, 2020.

³⁸ USEPA, 2018, AP42 Emission Factors, Section 4.7.1.1 Solvent Storage and Handling, Fugitive Emissions from Loading (VOCs), accessed on December 14, 2020 at <https://www3.epa.gov/ttn/chief/ap42/cho4/final/c4so7.pdf>.

estimating flagpole-level impacts from point and fugitive sources in simple and complex terrain. The model requires additional input parameters, including chemical emission data and local meteorology. After consultation with BAAQMD, meteorological data from the Metro Oakland International Airport (Oakland) meteorological station for the years 2009 to 2013 were selected to represent local weather conditions and prevailing winds.³⁹

The modeling also considered the spatial distribution and elevation of each emitting source in relation to the sensitive receptors. To accommodate the model's Cartesian grid format, direction-dependent calculations were obtained by identifying the Universal Transverse Mercator coordinates for each source location. In addition, digital elevation model data for the area were obtained and included in the model runs to account for complex terrain. Exhaust-stack parameters for the emission sources were provided by UC Berkeley.

A unit emission rate of one gram per second was used for all emission sources to obtain normalized pollutant concentrations per unit emission rate that are necessary for input into the risk assessment model. Receptors were placed at 20-meter increments along the Campus Park boundaries. Rectangular receptor grids consisted of 50-meter increments to a distance of 500 meters; 100-meter increments to a distance of two kilometers; and 250-meter increments to a distance of five kilometers. The air dispersion modeling generated two plot files for each emission source (annual average and hourly) that contain the normalized pollutant concentration at each receptor. A default receptor height of 1.5 meters was selected as the average breathing height.⁴⁰

Risk Calculation

The health risk calculations were performed using CARB's Hot Spots Analysis and Reporting Program, Version 2 (HARP2), Air Dispersion Modeling and Risk Tool (version 19121). HARP2 includes the current OEHHA toxicity factor database to calculate cancer risks and noncancer health hazards for various receptor types. The HARP2 model uses OEHHA's methodology and database to calculate health risks based on input parameters including the normalized annual and hourly plot files from the air dispersion model and source emissions.

Incremental cancer risk (expressed in cases per million), and noncancer chronic and acute health impacts were calculated for the point of maximum impact (PMI), maximum exposed individual resident (MEIR), maximum exposed individual worker (MEIW), and the maximum impact at a sensitive receptor. The PMI is the location within the receptor grid that predicts the highest (worst-case) pollutant concentrations and health risks but may or may not be a habitable location. These risks were compared to the significance thresholds in the BAAQMD CEQA Guidelines.

³⁹ California Air Resources Board, 2020, Meteorological Files, <https://ww2.arb.ca.gov/resources/documents/harp-aermod-meteorological-files>, accessed October 20, 2020.

⁴⁰ Bay Area Air Quality Management District, 2012, Recommended Methods for Screening and Modeling Local Risks and Hazards. Version 3.0.

Housing Projects #1 and #2

Operation

- **Transportation.** The average daily trip (ADT) generation and VMT data were provided by Fehr & Peers. Though the Housing Projects #1 and #2 are in a TPA and are thus assumed to have a less than significant VMT impact for transportation purposes, as discussed in Chapter 5.15, Transportation; however, for the purposes of the air quality analysis, criteria air pollutant emissions from VMT generated by these housing projects are evaluated in this chapter. Vehicle emission rates are based on calendar year 2024 vehicle emissions data obtained from CARB's EMFAC2017 Version 1.0.3 web database and adjusted based on methodology provided in Appendix A of the CalEEMod User's Guide.⁴¹ Additionally, the emission rates for the LDA, LDT1, LDT2, and MDV vehicle classes account for the SAFE adjustment factors released by CARB.^{42, 43}
 - Housing Project #1 would generate a net increase of up to 367 ADTs per day. In addition, based on an anticipated annual VMT of 358,275 miles per year, Housing Project #1 would generate up to 984 miles per day. Modeling assumes 984 miles per day (i.e., 358,275 miles per year divided by 364 days) to account for the CalEEMod methodology of basing annual VMT on 364 days instead of 365 days. For further details, refer to Appendix C2, Housing Project #1 (Anchor House) Air Quality and Greenhouse Gas Modeling, of this Draft EIR.
 - Housing Project #2 would generate up to 521 ADTs per day. In addition, based on an anticipated annual VMT of 639,183 miles per year, Housing Project #2 would generate up to 1,751 miles per day. For purposes of this analysis, the modeling assumes 1,756 miles per day (i.e., 639,183 miles per year divided by 364 days) to account for the CalEEMod methodology of basing annual VMT on 364 days instead of 365 days. For further details, refer to Appendix C3, Housing Project #2 (People's Park) Air Quality and Greenhouse Gas Modeling, of this study.
- **Energy Use.** The buildings for Housing Projects #1 and #2 would meet the 2019 Building Energy Efficiency Standards. Because design credits for LEED Gold certification would be pursued for the proposed student housing building in addition to a target of a 20 percent reduction in energy use compared to the 2019 Building Energy Efficiency Standards, assuming compliance to only the 2019 Building Energy Efficiency Standards is a potentially conservative assumption. In addition to basing the energy usage on the 2019 Building Energy Efficiency Standards, proposed buildings are modeled as all electric (i.e., no natural gas connections). It is assumed that conversion to all electric-powered buildings would increase electricity demand by 60 percent compared to mixed-fuel buildings (i.e., buildings that uses both electricity and natural gas).⁴⁴

⁴¹ California Air Pollution Control Officers Association, 2017, California Emissions Estimator Model, Version 2016.3.2, prepared by: BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and California Air Districts.

⁴² California Air Resources Board, 2019, November 20, EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicles Rule Part One and the Final Safe Rule, https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf.

⁴³ California Air Resources Board, 2020, June 26, EMFAC Off-Model Adjustment Factors for Carbon Dioxide (CO₂) Emissions to Account for the SAFE Vehicles Rule Part One and the Final SAFE Rule, https://ww3.arb.ca.gov/msei/emfac_off_model_co2_adjustment_factors_06262020-final.pdf.

⁴⁴ Based on the results for a Small Hotel with Package 2, California Energy Codes & Standards, 2019, July 25, 2019 Nonresidential New Construction Reach Code Cost Effectiveness Study.

- **Area Sources.** Area source emissions from use of consumer cleaning products and paints are based on CalEEMod default values and square footage of the proposed buildings. Additionally, no fireplaces are considered in the modeling.

Construction

Construction emissions are based on information provided by UC Berkeley. Where specific information was not available, CalEEMod default values were used. Housing Projects #1 and #2 construction emissions were quantified using CalEEMod, Version 2016.3.2.25.

- Construction emissions for Housing Project #1 were based on a 34-month construction duration (739 working days) commencing in September 2021 and completed by July 2024. Table 5.2-8, Construction Activities, Phasing, and Equipment: Housing Project #1, shows the preliminary construction schedule, phasing, and construction equipment for Housing Project #1 based on information provided and CalEEMod defaults (see also Appendix C2, Housing Project #1 [Anchor House] Air Quality and Greenhouse Gas Modeling, of this Draft EIR).
- Housing Project #2 construction emissions were based on an 18-month construction duration (333 working days) commencing in April 2023 and completed by October 2024. Table 5.2-9, Construction Activities, Phasing, and Equipment: Housing Project #2, shows the preliminary construction schedule, phasing, and construction equipment for Housing Project #2 based on information provided and CalEEMod defaults (see also Appendix C3, Housing Project #2 [People's Park] Air Quality and Greenhouse Gas Modeling, of this Draft EIR).

The analysis also considers the combined average daily construction emissions from both Housing Projects #1 and #2. Combined average daily emissions were based on an overall 37-month construction duration (787 working days).

TABLE 5.2-8 CONSTRUCTION ACTIVITIES, PHASING, AND EQUIPMENT: HOUSING PROJECT #1

Construction Activity	Start/End Dates	Construction Equipment
Demolition and Demolition Debris Haul	9/1/2021 to 11/1/2021	1 concrete industrial saw; 1 rubber-tired dozer; 2 tractor/loaders/backhoes; 1 water truck
Site Preparation	11/2/2021 to 11/8/2021	1 grader; 1 tractor/loader/backhoe; 1 water truck
Grading and Grading Soil Haul	11/9/2021 to 11/21/2021	1 concrete industrial saw; 1 rubber-tired dozer; 2 tractor/loaders/backhoes; 1 water truck
Building Construction and Pile Driving	11/22/2021 to 12/2/2021	1 crane; 2 forklifts; 2 tractor/loader/backhoes; 1 bore/drill rig ^a
Building Construction	12/3/2021 to 7/1/2024	1 crane; 2 forklifts; 2 tractor/loader/backhoes
Architectural Coating	5/14/2024 to 7/1/2024	1 air compressor
Paving	5/14/2024 to 7/1/2024	4 cement and mortar mixers; 1 paver; 1 roller; 1 tractor/loader/backhoe

Note: Construction phasing is based on CalEEMod default durations, normalized to fit construction duration provided and verified by UC Berkeley

a. bore/drill was conservatively included in the model in the event pile driving was needed, but is not anticipated to be required.

Source: UC Berkeley; PlaceWorks, 2020.

TABLE 5.2-9 CONSTRUCTION ACTIVITIES, PHASING, AND EQUIPMENT: HOUSING PROJECT #2

Construction Activity	Start/End Dates	Construction Equipment
Building and Asphalt Demolition and Debris Haul	4/03/2023 to 4/04/2023	1 concrete industrial saw; 1 rubber-tired dozer; 3 tractor/loaders/backhoes; 1 water truck
Building Construction	4/03/2023 to 3/07/2024	1 crane; 2 forklifts; 1 generator set; 1 tractor/loader/backhoe; 3 welders
Pile Driving	4/03/2023 to 4/30/2023	1 bore/drill rig
Site Preparation, Grading, and Trenching	4/04/2023 to 4/10/2023	1 grader; 1 scraper; 2 tractors/loaders/backhoes; 1 rubber-tired dozer; 1 excavator; 1 water truck
Site Preparation Soil Haul	4/04/2023 to 4/07/2023	No additional equipment
Architectural Coating (all)	4/05/2024 to 5/05/2024	2 air compressors; 2 aerial lifts
Paving	6/04/2024 to 7/04/2024	1 cement mortar mixer; 1 paver; 1 paving equipment; 2 rollers; 1 tractor/loader/backhoe
Finishing/Landscaping	8/05/2024 to 10/04/2024	1 forklift; 1 skid steer loader

Note: Construction phasing is based on CalEEMod defaults and information provided and verified by UC Berkeley.

Source: UC Berkeley; PlaceWorks, 2020.

Housing Projects #1 and #2 Construction Health Risk Assessment

A construction HRA was conducted for the proposed project using Lakes Environmental AERMOD View and is provided in Appendix D2, Housing Project #1 (Anchor House) Construction Health Risk Assessment, and D3, Housing Project #2 (People's Park) Construction Health Risk Assessment, for Housing Projects #1 and #2. The construction HRA evaluates the potential construction-related health impacts from DPM and PM_{2.5}. Sources evaluated in the construction HRA include haul trucks and off-road construction equipment such as excavators, tractors/loaders/backhoes, cranes, forklifts, bore/drill rigs, generators, welders, and air compressors. The methodology used in this HRA is consistent with the BAAQMD^{45, 46, 47} and OEHA⁴⁸ guidance documents. Potential exposures to DPM and PM_{2.5} from construction of Housing Projects #1 and #2 were evaluated for off-site sensitive receptors proximate to the sites. The EPA AERMOD air dispersion modeling program and OEHA guidance documents were used to estimate excess lifetime cancer risks, chronic noncancer hazard indices, and the PM_{2.5} maximum annual concentrations at the nearest sensitive receptors. These risks were compared to the significance thresholds in the BAAQMD CEQA Guidelines.

⁴⁵ BAAQMD, 2017, California Environmental Quality Act Air Quality Guidelines.

⁴⁶ BAAQMD, 2010, Screening Tables for Air Toxics Evaluation During Construction.

⁴⁷ BAAQMD, 2012, Recommended Methods for Screening and Modeling Local Risks and Hazards, version 3.0.

⁴⁸ OEHA, 2015, Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments, February.

5.2.3.2 IMPACT ANALYSIS

AIR-1	The proposed project could conflict with or obstruct implementation of the applicable air quality plan.
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LRDP Update

A consistency determination plays an important role in local agency project review by linking local planning and individual projects to the 2017 Clean Air Plan. It fulfills the CEQA goal of informing decision-makers of the environmental efforts of the project under consideration at an early enough stage to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to clean air goals in the Bay Area.

As described in Section 5.3.2, Standards of Significance, BAAQMD requires a consistency evaluation of a plan with its current AQMP measures. BAAQMD considers project consistency with the AQMP in accordance with the following:

- The project supports the primary goals of the AQMP.
- The project includes applicable control measures from the AQMP.
- The project disrupts or hinders implementation of any AQMP control measures.
- A comparison that the project VMT or vehicle trip increase is less than or equal to the projected population increase.

The primary goals of the 2017 Clean Air Plan are to attain the State and federal AAQS, reduce population exposure and protect public health in the Bay Area, and reduce GHG emissions and protect the climate. Furthermore, the 2017 Clean Air Plan also lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal.

Attain Air Quality Standards

BAAQMD's 2017 Clean Air Plan strategy is based on regional population and employment projections in the Bay Area compiled by ABAG, which are based in part on underlying land use designations in county and city plans. These demographic projections are incorporated into Plan Bay Area 2040 to determine VMT in the Bay Area, which BAAQMD uses to forecast future air quality trends. The SFBAAB is currently designated a nonattainment area for O₃, PM_{2.5}, and PM₁₀ (State AAQS only).

As discussed further in Chapter 5.12, Population and Housing, of this Draft EIR, UCOP's Institutional Research and Academic Planning coordinates the collection of enrollment data and the development of short- and long-term plans for the numbers and types of students that can be accommodated in the UC system. The goal of the review is to ensure the UC system is meeting its undergraduate enrollment commitments to the State. The proposed LRDP Update accommodates planned growth at the UC Berkeley campus.

Given that the land uses associated with the proposed LRDP Update would reflect ongoing use of the UC Berkeley campus in a university setting (see also Chapter 5.10, Land Use and Planning), BAAQMD emissions

forecasts should consider the additional growth and associated emissions from UC Berkeley activities. However, the student projections in the current LRDP underestimated the amount of student population growth through 2020. As a result, the existing student population is higher than the projected population in the 2020 LRDP. The proposed LRDP Update also considers additional projected student and faculty/staff population at the UC Berkeley campus through 2036. Because the student population and employment growth outpaced the 2020 LRDP estimates, growth at the UC Berkeley campus is conservatively considered to potentially exceed the estimates in the 2017 Clean Air Plan. Similarly, the proposed LRDP Update includes additional population and faculty/staff growth through 2036. Accordingly, impacts would be *significant*.

Reduce Population Exposure and Protect Public Health

Buildout of the proposed LRDP Update could result in new sources of TACs and PM_{2.5}. Stationary sources (e.g., cogeneration plant), including smaller stationary sources (e.g., emergency generators and boilers) are subject to review by BAAQMD as part of the permitting/registration process. Adherence to BAAQMD permitting/registration regulations would ensure that new stationary sources of TACs do not expose populations to significant health risk (i.e., risks that exceed BAAQMD thresholds for individual projects or cumulative thresholds). Any such new stationary sources would be required to obtain permits from BAAQMD and achieve the incremental risk thresholds. Mobile sources of air toxics (e.g., truck idling) are not regulated directly by BAAQMD. As a result, potential future development under the proposed LRDP Update could result in new sources of criteria air pollutant emissions and/or TACs near existing or planned sensitive receptors.

Individual development projects would be required to achieve the incremental risk thresholds established by BAAQMD. Modeling conducted for the proposed LRDP Update in impact discussion AIR-3 identify that implementation of the proposed LRDP Update would not introduce new sources of TACs that on a cumulative basis could expose sensitive populations to significant health risk. Therefore, impacts would be *less than significant*.

Reduce GHG Emissions and Protect the Climate

Consistency of the proposed LRDP Update with State, regional, and local plans adopted for the purpose of reducing GHG emissions are discussed under impact discussion GHG-2 in Chapter 5.7, Greenhouse Gas Emissions, of this Draft EIR. Potential future development under the proposed LRDP Update would be required to adhere to the UCOP Sustainability Policies and the UC Berkeley Sustainability Plan goals. Furthermore, growth at the UC Berkeley campus outlined in the proposed LRDP Update is consistent with regional strategies for infill development identified in Plan Bay Area. The proposed LRDP Update is consistent with State, regional, and local plans to reduce GHG emissions. Therefore, the proposed LRDP Update is consistent with the goal of the 2017 Clean Air Plan to reduce GHG emissions and protect the climate, and the impact would be *less than significant*.

2017 Clean Air Plan Control Measures

Table 5.2-10, Control Measures from the BAAQMD 2017 Clean Air Plan, identifies the control measures that are required by BAAQMD to reduce emissions for a wide range of both stationary and mobile sources. As shown in Table 5.2-10, the proposed LRDP Update would not conflict with the 2017 Clean Air Plan and would not hinder BAAQMD from implementing the control measures in the 2017 Clean Air Plan. Accordingly, impacts would be *less than significant*.

TABLE 5.2-10 CONTROL MEASURES FROM THE BAAQMD 2017 CLEAN AIR PLAN

Type	LRDP Update Consistency
Stationary Source Control Measures	Stationary and area sources are regulated directly by BAAQMD; therefore, as the implementing agency, new stationary and area sources at UC Berkeley would be required to comply with BAAQMD's regulations. BAAQMD routinely adopts/revises rules or regulations to implement the stationary source control measures to reduce stationary source emissions. New stationary sources of emissions on and off campus (e.g., emergency generators, boilers) would require review by BAAQMD for permitted sources of air toxics, which would ensure consistency with the 2017 Clean Air Plan. The 2020 Campus Energy Plan identified several options for replacing and/or upgrading the cogeneration plant at the UC Berkeley campus. Improvements proposed by UC Berkeley for the cogeneration plant would be done in consultation with BAAQMD and would result in a reduction in on-campus stationary source emissions. As a result, the proposed LRDP Update would be consistent with the 2017 Clean Air Plan stationary source control measures. As described in Chapter 3, Project Description, the proposed LRDP Update contains goals to reduce emissions by reducing vehicle usage, promoting sustainable transportation, and prioritizing nonvehicular circulation.
Transportation Control Measures	Transportation control measures are strategies to reduce vehicle trips, vehicle use, VMT, vehicle idling, and traffic congestion for the purpose of reducing motor vehicle emissions. Although most of the transportation measures are implemented at the regional level—that is, by MTC or Caltrans—the 2017 Clean Air Plan relies on local communities to assist with implementation of some measures. The UC Berkeley 2020 Sustainability Plan identifies several transportation measures that would ensure consistency of the proposed LRDP Update with the transportation control measures of the 2017 Clean Air Plan. UCOP has goals and policies regarding UC Berkeley's fleet and transportation commute. Specifically, the UCOP has a goal to reduce single-occupant-vehicle (SOV) use to no more than 40 percent of employees by 2050.
Energy and Climate Control Measures	The energy and climate control measures are intended to reduce energy use and decarbonize the energy sector as a means of reducing adverse air quality emissions. The UC Berkeley 2020 Sustainability Plan and UCOP have specific goals with regard to use of carbon neutral energy sources, including procuring 100 percent clean electricity for eligible accounts by 2020. Therefore, implementation of the proposed LRDP Update would not conflict with energy and climate control measures.
Buildings Control Measures	The buildings control measures focus on working with local governments to facilitate adoption of best GHG emissions control practices and policies. The UC Berkeley 2020 Sustainability Plan identifies several measures to reduce energy use from the built and natural environment. New buildings at the UC Berkeley campus are designed to achieve LEED Gold ratings. Under the UCOP sustainability goals and policies, new buildings and major modifications are also designed to achieve building energy targets and/or outperform the California Building Energy Title 24 energy-efficiency standards by at least 20 percent. Therefore, implementation of the proposed LRDP Update would not conflict with energy and climate control measures.
Agriculture Control Measures	Agricultural practices account for a small portion, roughly 1.5 percent, of the Bay Area GHG emissions inventory. The GHGs from agriculture include methane and nitrous oxide, in addition to carbon dioxide. The agriculture control measures target larger scale farming practices that are not proposed under the project. The proposed LRDP Update does not have large-scale farming at the UC Berkeley campus that would fall under the BAAQMD agricultural control measures. Therefore, implementation of the proposed LRDP Update would not conflict with these agricultural control measures.
Natural and Working Lands Control Measures	The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetlands. An estimate of carbon sequestration benefits at UC Berkeley have been included in Chapter 5.7, Greenhouse Gas Emissions. Campus growth associated with the proposed LRDP Update would occur primarily in the City Environs Properties, the Campus Park, and the Clark Kerr Campus, and growth would be limited in open space areas of the Hill Campus East. Because the proposed LRDP Update focuses

TABLE 5.2-10 CONTROL MEASURES FROM THE BAAQMD 2017 CLEAN AIR PLAN

Type	LRDP Update Consistency
	on infill development and not greenfield development, it would not conflict with the natural and working lands control measures of the 2017 Clean Air Plan.
Waste Management Control Measures	The waste management control measures include strategies to increase waste diversion rates through efforts to reduce, reuse, and recycle. The UC Berkeley 2020 Sustainability Plan includes sustainable services waste reduction measures, including UC Berkeley goals to replace single use plastic food ware with locally compostable and reusable food ware at dine-in facilities on the UC Berkeley campus. The UCOP 2019 Sustainability Policies include zero waste reduction goals to reduce 50 percent of per capita solid waste levels by 2030 and waste-diversion goal of 90 percent for the UC campuses. Implementation of the ongoing UC Berkeley policies to reduce waste would ensure that implementation of the proposed project would not conflict with these waste management control measures.
Water Control Measures	The 2017 Clean Air Plan includes measures to reduce water use. The UC Berkeley 2020 Sustainability Plan includes built and natural environment goals and policies targeting water reductions. The UCOP 2019 Sustainability Policies include targets of a 36 percent reduction in potable water use by 2025 for the UC system. Implementation of the ongoing UC Berkeley policies to achieve the potable water consumption reduction targets would ensure that implementation of the proposed project would not conflict with these water control measures.
Super-GHG Control Measures	Super-GHGs include methane, black carbon, and fluorinated gases. The compounds are sometimes referred to as short-lived climate pollutants because their lifetimes in the atmosphere are generally shorter than most GHGs. Measures to reduce super-GHGs are addressed on a sector-by-sector basis in the 2017 Clean Air Plan. UC Berkeley monitors refrigerant use on campus and includes it as part of its annual inventory reporting.
Further Study Control Measures	The majority of the further study control measures apply to sources regulated directly by BAAQMD. Because BAAQMD is the implementing agency, new and existing sources of stationary and area sources at UC Berkeley would be required to comply with these additional further study control measures in the 2017 Clean Air Plan.

Source: Bay Area Air Quality Management District, 2017 Revised, *California Environmental Quality Act Air Quality Guidelines*.

Regional Growth Projections for VMT and Population

Future potential development as a result of implementing the proposed LRDP Update would result in additional sources of criteria air pollutants. BAAQMD's approach to evaluating impacts from criteria air pollutants generated by a plan's long-term growth is conducted by comparing population estimates to the VMT estimates. This is because BAAQMD's AQMP plans for growth in the SFBAAB are based on regional population projections identified by ABAG and growth in VMT identified by MTC. According to ABAG, population at UC Berkeley is indirectly accounted for and is not formally coordinated.⁴⁹ Changes in regional, community-wide emissions could affect the ability of BAAQMD to achieve the air quality goals in the 2017 Clean Air Plan. Therefore, air quality impacts for a plan-level analysis are based on consistency with the regional growth projections. Table 5.2-11, Comparison of the Change in Population and VMT in the EIR Study Area, compares the projected increase in the UC Berkeley population (students and faculty/staff) with the projected increases in total VMT.

⁴⁹ Michael Reilly, Principal, Planning, Bay Area Metro, Association of Bay Area Governments, Metropolitan Transportation Commission, Email correspondence with Physical & Environmental Planning, UC Berkeley, February 2, 2021.

TABLE 5.2-11 COMPARISON OF THE CHANGE IN POPULATION AND VMT IN THE EIR STUDY AREA

Category	2018			2036-37 LRDP			Change from 2018	
	Number	Annual VMT	VMT/ Person	Number	Annual VMT	VMT/ Person	VMT/ Person	%
Students	39,708	13,156,088	331	48,200	14,461,436	300	-31	-9%
Faculty and Staff	15,421	53,047,998	3,440	19,000	65,493,346	3,447	7	0.2%
UC Berkeley Population	55,129	66,204,086	1,201	67,200	79,954,782	1,190	-11	-1%
Visitors ^a	3,935	16,011,554	NA	4,497	18,623,864	NA	NA	NA
Vendors	NA	130,000	NA	NA	158,600	NA	NA	NA

Note:

a. Visitor trips are based on a summation of annual events and attendance of events on campus. Annual average number of visitors and VMT was divided by 365 days per year to obtain average daily visitors at UC Berkeley.

Source: Fehr & Peers, 2020.

As previously stated, BAAQMD's AQMP requires that the VMT increase by less than or equal to the projected population increase (e.g., generate the same or less VMT per population). VMT estimates are based on data provided by Fehr & Peers. Existing (2018) annual VMT from faculty and staff account for 64 percent of all annual VMT at UC Berkeley, and student and visitor trips represent 16 percent and 19 percent of total VMT, respectively. At buildout of the proposed LRDP Update, annual VMT per student is anticipated to decrease by 9 percent and VMT per faculty and staff is not anticipated to change significantly (0.2 percent increase). Overall VMT per person (students and faculty and staff) is anticipated to decrease by 11 miles per person, or 1 percent compared to existing conditions. Consequently, this indicates that buildout conditions under the proposed LRDP Update would be more efficient (UC Berkeley population) than existing conditions. Therefore, the proposed project would not conflict with the 2017 Clean Air Plan in this regard, and impacts would be *less than significant*.

As part of the proposed project, UC Berkeley and future development projects would implement the air quality (AIR) CBP listed here, which has been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

CBP AIR-1 (Updated): UC Berkeley will continue to implement the same or equivalent transportation programs as currently exist, that strive to reduce the use of single-occupant and/or greenhouse gas emitting (internal combustion engine) vehicles by students, staff, faculty, and visitors to the UC Berkeley campus.

Implementation of CBP AIR-1 would ensure consistency with the UC Berkeley Sustainability Plan and ongoing efforts to reduce the use of single occupant vehicles and would not generate additional emissions causing an impact. The ongoing implementation of CBP AIR-1, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional

air quality impacts. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

Even with implementation of CBP AIR-1, implementation of the proposed LRDP Update would conflict with the 2017 Clean Air Plan because student population growth is greater than forecast in the current LRDP; therefore, impacts would be *significant*.

Impact AIR-1: Student population growth is greater than forecast in the current LRDP, potentially conflicting with the assumptions in the 2017 Clean Air Plan.

Mitigation Measures AIR-1: Implement Mitigation Measure POP-1.

Significance with Mitigation: Significant and unavoidable. As described, BAAQMD's AQMP plans for growth in the SFBAAB are based on regional population projections identified by ABAG and growth in VMT identified by MTC. According to ABAG, population at UC Berkeley is indirectly accounted for and is not formally coordinated. Early coordination with ABAG/MTC would ensure that the BAAQMD's Clean Air Plan accounts for UC Berkeley-related population changes. While Mitigation Measure AIR-1 would ensure that the local and regional projections used for the BAAQMD Clean Air Plan are prepared with knowledge of UC Berkeley enrollment and housing projections. No additional mitigation measures are available to prevent the potential conflict with the assumptions in current 2017 Clean Air Plan from the increase in student population at UC Berkeley. The identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects that are consistent with the Clean Air Plan that is current at the time of their proposal. However, due to the programmatic nature of the proposed LRDP Update, no additional mitigation measures are available, and the impact is considered *significant and unavoidable* ~~24~~

Housing Project #1

As described in Chapter 3, Project Description, of this Draft EIR, Housing Project #1 would accommodate the existing unmet demand for student housing at UC Berkeley, which is a matter of urgent concern. Thus, development of Housing Project #1 would not affect the student population enrolled and would not result in a substantial increase in population growth at UC Berkeley. Thus, Housing Project #1 would not substantially affect housing, employment, or population projections in the region that are the basis of the 2017 Clean Air Plan projections. In addition, the net increase in regional emissions generated by Housing Project #1 would not exceed BAAQMD's emissions thresholds (see impact discussion AIR-2). These thresholds are established to identify projects that have the potential to generate a substantial amount of criteria air pollutants. Therefore, Housing Project #1 would not conflict with or obstruct implementation of the 2017 Clean Air Plan and impacts from the implementation of the proposed project would be considered *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Same as Housing Project #1, Housing Project #2 would serve to accommodate existing unmet demand for student housing at UC Berkeley, which is a matter of urgent concern. Thus, development of Housing Project #1 would not affect the student population enrolled and would not result in a substantial increase in population growth at UC Berkeley. Thus, Housing Project #2 would not substantially affect housing, employment, or population projections in the region. In addition, the net increase in regional emissions generated by Housing Project #2 would not exceed BAAQMD's emissions thresholds (see impact discussion AIR-2 below). Therefore, Housing Project #2 would not conflict with or obstruct implementation of the 2017 Clean Air Plan, and impacts from the implementation of the proposed project would be considered *less than significant*.

Significance without Mitigation: Less than significant.

AIR-2	The proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is nonattainment under an applicable federal or State ambient air quality standard.
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This section analyzes potential impacts related to air quality that could occur from the buildout associated with the proposed LRDP Update, Housing Project #1, and Housing Project #2 in combination with the regional growth in the SFBAAB. The SFBAAB is currently designated a nonattainment area for California and National O₃, California and National PM_{2.5}, and California PM₁₀ AAQS. At a plan level, air quality impacts are measured by the potential for a project to exceed BAAQMD's significance criteria and contribute to the State and federal nonattainment designations in the SFBAAB. Any project that produces a significant regional air quality impact in an area that is in nonattainment adds to the cumulative impact. The proposed project could generate a substantial increase in criteria air pollutant emissions from construction and operational activities associated with potential future projects that could exceed the BAAQMD regional significance thresholds.

LRDP Update

LRDP Update Construction

Construction activities would temporarily increase criteria air pollutant emissions within the SFBAAB. The primary source of NO_x emissions is the operation of construction equipment. The primary sources of particulate matter (PM₁₀ and PM_{2.5}) emissions are activities that disturb the soil, such as grading and excavation, road construction, and building demolition and construction. The primary sources of VOC emissions are the application of architectural coating and off-gas emissions associated with asphalt paving. A discussion of health impacts associated with air pollutant emissions generated by construction activities is in Section 5.2.1.1, Air Pollutants of Concern.

Construction activities associated with the proposed LRDP Update would occur over the buildout horizon, causing short-term emissions of criteria air pollutants. Information regarding specific development

projects, soil types, and the locations of receptors would be needed in order to quantify the level of impact associated with construction activity. Due to the scale of development activity associated with buildout of the proposed LRDP Update, emissions would likely exceed the BAAQMD regional significance thresholds. In accordance with the BAAQMD methodology, emissions that exceed the regional significance thresholds would cumulatively contribute to the nonattainment designations of the SFBAAB. Emissions of VOC and NO_x are precursors to the formation of O₃. In addition, NO_x is a precursor to the formation of particulate matter (PM₁₀ and PM_{2.5}). Therefore, the proposed LRDP Update would cumulatively contribute to the nonattainment designations of the SFBAAB for O₃ and particulate matter (PM₁₀ and PM_{2.5}).

For the proposed LRDP Update, which is a broad-based policy plan, it is not possible to determine whether the scale and phasing of every individual project would exceed the BAAQMD's short-term regional or localized construction emissions thresholds. The construction analysis for Housing Projects #1 and #2, below, identify average daily combined emissions from two overlapping projects that do not exceed the BAAQMD project-level thresholds. However, during the course of the proposed LRDP Update, several overlapping construction activities are possible. As a result, construction activities associated with implementation of the proposed LRDP Update could potentially violate an air quality standard or contribute substantially to an existing or projected air quality violation.

As part of the proposed project, UC Berkeley and future development projects would implement the air quality (AIR) CBPs listed here, which have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP AIR-2 (Updated):** UC Berkeley will continue to comply with the current Bay Area Air Quality Management District basic control measures for fugitive dust control. The requirement to comply with the basic control measures will be identified in construction bids. The Bay Area Air Quality Management District's current basic control measures include:
 - Water all active construction areas at least twice daily, or as often as needed to control dust emissions. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water will be used whenever possible.
 - Pave, apply water twice daily or as often as necessary to control dust, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
 - Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
 - Sweep daily (with water sweepers using reclaimed water if possible) or as often as needed all paved access roads, parking areas and staging areas at the construction site to control dust.
 - Sweep public streets daily (with water sweepers using reclaimed water if possible) in the vicinity of the project site, or as often as needed, to keep streets free of visible soil material.
 - Hydroseed or apply nontoxic soil stabilizers to inactive construction areas.
 - Enclose, cover, water twice daily, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.).

- Limit vehicle traffic speeds on unpaved roads to 15 miles per hour.
- Replant vegetation in disturbed areas as quickly as possible.
- **CBP AIR-3 (Updated):** UC Berkeley will continue to implement the following control measures to reduce emissions of diesel particulate matter and ozone precursors from construction equipment exhaust:
 - Equipment will be properly serviced and maintained in accordance with the manufacturer's recommendations.
 - Construction contractors will also ensure that all nonessential idling of construction equipment is restricted to five minutes or less, in compliance with Section 2449 of the California Code of Regulations, Title 13, Article 4.8, Chapter 9.

CBP AIR-2 and CBP AIR-3, as well as the CBPs listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR, establish a series of actions that UC Berkeley and future development must take to reduce fugitive dust and fugitive emissions consistent with existing federal, State, regional, and UC regulations. The ongoing implementation of CBP AIR-2 and CBP AIR-3, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, would not create additional impacts from air emissions. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Though implementation of CBPs AIR-2 and AIR-3 would reduce impacts from fugitive dust and fugitive emissions and not create additional emissions, implementation of the proposed LRDP Update could generate construction exhaust emissions that exceed BAAQMD thresholds; therefore, impacts would be *significant*.

Impact AIR-2.1: Construction activities associated with the proposed LRDP Update could generate fugitive dust and construction equipment exhaust that exceed the Bay Area Air Quality Management District average daily construction thresholds.

Mitigation Measure AIR-2.1: UC Berkeley shall use equipment that meets the United States Environmental Protection Agency Tier 4 emissions standards or higher for off-road diesel-powered construction equipment with more than 50 horsepower, unless it can be demonstrated to UC Berkeley that such equipment is not commercially available. For purposes of this mitigation measure, “commercially available” shall mean the availability of Tier 4 engines similar to the availability for other large-scale construction projects in the city occurring at the same time and taking into consideration factors such as (i) potential significant delays to critical-path timing of construction and (ii) geographic proximity to the project site of Tier 4 Final equipment. Where such equipment is not commercially available, as demonstrated by the construction contractor, Tier 3 equipment shall be used. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Tier 4 interim emissions standard for a similarly sized engine, as defined by the California Air Resources Board’s regulations. The requirement to use Tier 4 interim equipment or higher for engines over 50 horsepower shall be identified in construction bids.

- Prior to construction, the project engineer shall ensure that all demolition and grading plans clearly show the requirement for United States Environmental Protection Agency Tier 4 interim or higher emissions standards for construction equipment over 50 horsepower.
- During construction, the construction contractor shall maintain a list of all operating equipment in use on the construction site for verification by UC Berkeley.
- The construction equipment list shall state the makes, models, and numbers of construction equipment on-site.
- To the extent that equipment is available and cost-effective, contractors shall use electric, hybrid, or alternate-fueled off-road construction equipment.

Significance with Mitigation: Significant and unavoidable. CBP AIR-2 would require adherence to the current BAAQMD basic control measures for reducing fugitive dust and reduce fugitive emissions to less-than-significant levels. CBP AIR-3 and Mitigation Measure AIR-2.1 would reduce NO_x emissions by requiring use of Tier 4 interim construction equipment and reduce nonessential idling for future development associated with the proposed LRDP Update. However, projects could still generate construction exhaust emissions in excess of the BAAQMD significance thresholds, depending on the number of large off-road construction equipment or number of simultaneous construction projects under construction at any one time throughout the lifetime of the proposed LRDP Update. The identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects that comply with BAAQMD screening criteria or meet applicable thresholds of significance. However, due to the programmatic nature of the proposed LRDP Update, no additional mitigation measures are available, and the impact is considered *significant and unavoidable*.

LRDP Update Operation

BAAQMD has identified thresholds of significance for criteria pollutant emissions and criteria air pollutant precursors, including VOC, NO, PM₁₀, and PM_{2.5}. Development projects below the significance thresholds are not expected to generate sufficient criteria pollutant emissions to violate any air quality standard or contribute substantially to an existing or projected air quality violation. According to BAAQMD's CEQA Guidelines, long-range plans, such as the proposed LRDP Update, present unique challenges for assessing impacts. Due to the SFBAAB's nonattainment status for ozone and PM and the cumulative impacts of growth on air quality, these plans almost always have significant, unavoidable adverse air quality impacts.

Implementation and adoption of the proposed LRDP Update would result in an increase in development intensity at UC Berkeley. Buildout of the proposed LRDP Update would result in direct and indirect criteria air pollutant emissions. Although BAAQMD's CEQA Air Quality Guidelines only require an emissions inventory of criteria air pollutants for project-level analyses, enough information regarding the buildout of the proposed LRDP Update is available to generate an inventory of criteria air pollutants and identify the magnitude of emissions from buildout of the proposed LRDP Update. Table 5.2-12, UC Berkeley LRDP 2036 Forecast, identifies the net change in emissions from land uses at UC Berkeley in 2036–37 compared to those associated with buildout of the proposed LRDP Update adjusted BAU forecast.

TABLE 5.2-12 UC BERKELEY LRDP 2036 FORECAST

Sector	Average Pounds per Day			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Existing Land Uses in 2036–37 without LRDP Update				
Cogeneration Plant ^a	34	303	48	48
Fuel Use ^a	3	58	4	4
Campus Fleet ^a	<1	1	<1	<1
Student Commute ^b	2	3	6	2
Faculty and Staff Commute ^b	7	11	20	8
Visitors ^b	2	2	4	2
Vendors ^b	<1	<1	<1	<1
Consumer Products / Painting ^c	324	—	—	—
Total	372	379	82	65
2036–37 LRDP Adjusted BAU				
Cogeneration Plant ^a	31	273	43	43
Fuel Use ^a	5	87	7	7
Campus Fleet ^a	<1	1	<1	<1
Student Commute ^b	2	3	6	2
Faculty and Staff Commute ^b	9	14	24	10
Visitors ^b	2	3	5	2
Vendors ^b	<1	<1	<1	<1
Consumer Products / Painting ^c	490	—	—	—
Total	538	381	85	64
Change				
Change from Existing Land Uses	166	2	3	<1
BAAQMD Threshold	54	54	82	54
Exceeds Average Daily Threshold	Yes	No	No	No
	Tons per Year			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Existing Land Use in 2036–37 Annual Emissions	67	68	14	11
LRDP 2036–37 Emissions	98	69	14	11
Change in Emissions	31	1	<1	<1
BAAQMD Annual Project-Level Threshold	10	10	15	10
Exceeds Annual Threshold	Yes	No	No	No

Notes: Totals may not add to 100 percent due to rounding. BAU = business as usual.

a. Fuel use for scope 1 emissions provided by UC Berkeley based on the GHG emissions inventory. Cogeneration plant emissions are based on reported data. Fuel use emissions from boilers and emergency generators are based on annual fuel use provided by UC Berkeley and the USEPA's AP 42 emissions factors. Campus fleet fuel use emissions for criteria air pollutants are based on EMFAC2017.

b. Transportation sector emissions are based on VMT provided by Fehr & Peers and modeled using EMFAC2017.

c. Consumer product use and recoating ROG emissions are based on the emissions factors from the CalEEMod User's Guide. Does not include implementation of Mitigation Measure AIR-2.2, requiring use of low- or no-VOC paints.

See Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling, of this Draft EIR, for modeling methodology.

Source: PlaceWorks, 2020.

As shown in Table 5.2-12, buildout of the proposed LRDP Update would generate a substantial increase in ROG emissions that exceeds the BAAQMD regional significance thresholds. The increase in NO_x, PM₁₀, and PM_{2.5} emissions would not exceed the BAAQMD significance thresholds. The vast majority (99 percent) of the emissions increase is associated with ROG from consumer products and repainting buildings at the UC Berkeley campus. Faculty/staff commute VMT makes up the remaining 1 percent. In addition, improvements to the cogeneration plant outlined in the UC Berkeley Campus Energy Plan would result in additional reduction of emissions not captured in the adjusted BAU scenario (see Table 5.2-13, Cogeneration Plant Emissions Reductions from Implementation of the Campus Energy Plan). The actual reduction in emissions from the cogeneration plant would be based on the final design of the cogeneration plant in consultation with BAAQMD.

TABLE 5.2-13 COGENERATION PLANT EMISSIONS REDUCTIONS FROM IMPLEMENTATION OF THE CAMPUS ENERGY PLAN

Sector	Average Pounds per Day			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Cogeneration Plant BAU	31	273	43	43
Hybrid Nodal Heat Recovery Option	5	41	6	6
Reduction	-26	-232	-36	-36

	Tons per Year			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Reduction from BAU	-5	-42	-7	-7

Note: Totals may not add to 100 percent due to rounding. Modeling based on fuel use in the Campus Energy Plan for the different design options. Actual emissions would be based on the emissions factors for the equipment in consultation with BAAQMD.

Source: ARUP, 2020, University of California, Berkeley Campus Energy Plan.

Emissions of ROG that exceed the BAAQMD regional significance thresholds would contribute to the ozone nonattainment designations of the San Francisco Bay Area Air Basin and cumulatively contribute to health impacts. As identified previously, the incremental effect of the project on health outcomes in the Bay Area is speculative. (See “Health Outcomes Associated with the Regional Significance Thresholds” in Section 5.2.2, Standards of Significance, and “UC Berkeley LRDP Friant Ranch – Regional Scale Models & Health Incidents” in Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling.)

Air districts develop region-specific thresholds of significance based on existing attainment status for the California and National AAQS in the air basin (see Table 5.2-3, Attainment Status of Criteria Pollutants in the San Francisco Bay Area Air Basin). The ambient air quality standards were developed based on scientific evidence related to the acceptable pollutant concentrations above which human health may be adversely impacted. These concentrations are the cumulative effect of all pollutant sources in the air basin. BAAQMD considers projects with emissions below the thresholds of significance to have a minor or negligible impact

on the regional cumulative emission concentrations that exceed the ambient air quality standards.⁵⁰ Projects that exceed an applicable threshold could contribute to the continued nonattainment designation of a region or potentially degrade a region from attainment to nonattainment, resulting in acute or chronic respiratory and cardiovascular illness from exposure to concentrations of criteria air pollutants above what USEPA and CARB consider safe. As identified above, the proposed LRDP Update would exceed the BAAQMD significance threshold for ROG. ROG emissions contribute to the formation of ozone. The vast majority of ROG emissions are from consumer product use (cleaning products, aerosols, etc.).

BAAQMD has not provided methodology to assess the specific correlation between mass emissions generated and the effect on health in order to address the issue raised in *Sierra Club v. County of Fresno* (Friant Ranch, L.P.) (2018) 6 Cal.5th 502, Case No. S21978.

- Ozone concentrations depend on many complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns.
- Because of the complexities of predicting ground-level ozone concentrations in relation to the National AAQS and California AAQS, model results from the incremental increase in emissions generated by an individual project are not regionally substantial in scale to effect PM and ozone concentrations, and therefore changes in associated health effects.
- In addition, many projects may have emissions that are less than the uncertainty level of regional air quality models, and in these cases, quantitative results will not be meaningful.
- Lastly, air pollution is only one potential contributor to the overall health outcomes. Health is also affected by medical care, genetics, behavior, and social factors.

Therefore, on a plan level, identifying how the increase in ROG emissions above the threshold would affect regional-scale modeling in the SFBAAB and the incremental number of health incidences is considered speculative. However, if a project in the Bay Area exceeds the regional significance thresholds, the project could contribute to an increase in health effects in the basin until the attainment standards are met in the SFBAAB. Regional-scale modeling often is misleading when considering projects, such as the proposed LRDP Update, that exceed the significance standard by a very small margin. Modeling of ROG exceedance using regional-scale modeling would not provide a reasonable degree of scientific certainty, and therefore would not provide reliable, credible information of value to decision-makers or the public regarding effects on health. The implementation of the proposed LRDP Update would result in a potentially *significant* long-term regional air quality impact.

Impact AIR-2.2: Buildout of the proposed LRDP Update would result in a substantial increase in ROG emissions from use of consumer products and repainting building at UC Berkeley that would contribute to the ozone nonattainment designations of the San Francisco Bay Area Air Basin (project and cumulative).

⁵⁰ Source: Bay Area Air Quality Management District, 2017 Revised, *California Environmental Quality Act Air Quality Guidelines*.

Mitigation Measure AIR-2.2: To reduce Reactive Organic Gas emissions, for interior architectural coatings, UC Berkeley shall utilize certified (e.g., Greenguard or Green Seal) low-Volatile Organic Compound (VOC) paints or, when feasible, no-VOC paints (i.e., less than 5 grams per liter of VOC). UC Berkeley shall verify that the requirement to use low-VOC (and/or no-VOC) paints is identified in construction bids and on architectural plans.

Significance with Mitigation: Significant and unavoidable. Implementation of Mitigation Measure AIR-2.2 would require use of low- or no-VOC paints at UC Berkeley and could reduce ROG emissions on campus by 44 lbs/day (8 tons per year). Combined with the reductions anticipated with implementation of the Hybrid Heat Nodal Recovery option identified in the Campus Energy Plan, emissions would be reduced by 70 lbs/day (13 tons per year) of ROG. However, ROG emissions from consumer product use at the UC Berkeley Campus would continue to exceed the BAAQMD regional significance thresholds and cumulatively contribute to the ozone nonattainment designations. Because the use of consumer products and the VOC content contained within consumer products is not something that UC Berkeley has full control over, there are no mitigation measures available to reduce this program-level impact. Therefore, long-term implementation of the proposed LRDP Update is considered *significant and unavoidable*.

Housing Project #1

Housing Project #1 Construction

Construction activities produce combustion emissions from various sources, such as on-site heavy-duty construction vehicles, vehicles hauling materials to and from the site, and motor vehicles transporting the construction crew. Site preparation activities produce fugitive dust emissions (PM_{10} and $PM_{2.5}$) from demolition and soil-disturbing activities as well as grading and excavation. Construction of the proposed Housing Project #2 would require demolition and removal of an existing buildings and paved surfaces, site preparation and grading of the project site, and construction of the proposed components. Construction of proposed Housing Project #1 would be approximately 34 months. Air pollutant emissions from construction activities on-site would vary daily as construction activity levels change. Construction activities associated with Housing Project #1 would result in emissions of ROG, NO_x , CO, PM_{10} , and $PM_{2.5}$. An estimate of construction emissions associated with Housing Project #1 are shown in Table 5.2-14, Housing Project #1 Construction-Related Criteria Air Pollutant Emissions Estimates.

The emissions in Table 5.2-14 for each project include the implementation of CBP AIR-2, which is required by regulation or as standard practice. As identified previously, CBPs are specific approaches or methods on a particular environmental topic that have been determined to be the most effective and practical means of preventing or reducing environmental impacts. Additionally, the table includes the total combined long-term emissions of both Housing Projects #1 and #2 (i.e., Housing Project #1 “total” from Table 5.2-14 and Housing Project #2 “total” from Table 5.2-16). In order to provide a conservative estimate of average daily emissions associated with the Housing Projects, the significance determination pertaining to construction exhaust emissions is based on the combined Housing Projects #1 and #2 emissions.

TABLE 5.2-14 HOUSING PROJECT #1 CONSTRUCTION-RELATED CRITERIA AIR POLLUTANT EMISSIONS ESTIMATES

Year	Criteria Air Pollutants (tons/year) ^{a,b}					
	ROG	NOx	Fugitive PM ₁₀ ^c	Exhaust PM ₁₀	Fugitive PM _{2.5} ^c	Exhaust PM _{2.5} ^c
2021	<1	1	<1	<1	<1	<1
2022	<1	2	1	<1	<1	<1
2023	<1	2	1	<1	<1	<1
2024	4	1	<1	<1	<1	<1
Housing Project #1 Total	4	7	2	<1	<1	1
Housing Project #1 and #2	8	9	2	<1	1	<1

Criteria Air Pollutants (average lbs/day) ^{a,b}						
Housing Project #1 ^d	12	18	5	<1	1	<1
Housing Projects #1 and #2 ^e	20	23	5	1	1	1
BAAQMD Threshold	54	54	Implement BCMs	82	Implement BCMs	54
Exceeds Threshold	No	No	N/A	No	N/A	No

Notes: BCM = Basic Control Measures; NA = not applicable; emissions may not total to 100 percent due to rounding; Shading represents the fugitive dust component of the emissions that are mitigated through BAAQMD's BCMs. Modeling does not include Mitigation Measure AIR-2.1, which requires use of Tier 4 equipment for engines 50 horsepower and higher.

a. Construction phasing is based on the preliminary information provided and verified by UC Berkeley. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by South Coast Air Quality Management District of construction equipment and phasing for comparable projects.

b. Modeling assumes building area 496,600 square feet.

c. Includes implementation of CBP AIR-2, which requires application of BAAQMD basic control measures for fugitive dust control such as watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, and street sweeping. Implementation of BAAQMD construction basic control measures is considered to result in construction-related fugitive dust emissions that are acceptable.

d. Average daily emissions are based on the construction emissions divided by the total number of active construction days. The total number of construction days is estimated to be 739 days.

e. Average daily emissions are based on the construction emissions divided by the total number of active construction days of both projects. The total number of nonoverlapping construction days is estimated to be 787 days.

Source: CalEEMod 2016.3.2.25.

Fugitive Dust

Ground-disturbing activities during project construction, such as site preparation and grading, would generate fugitive dust (PM₁₀ and PM_{2.5}) that, if left uncontrolled, could expose the areas downwind of the construction site to air pollution from the construction dust. Fugitive PM₁₀ is typically the most significant source of air pollution from the dust generated from construction. The amount of fugitive dust generated during construction would be highly variable and is dependent on the amount of material being demolished, the type of material, its moisture content, and meteorological conditions. As described in Section 5.2.2, Standards of Significance, BAAQMD does not provide a quantitative threshold for construction-related fugitive dust emissions, and a project's fugitive dust emissions are considered less than significant with implementation of BAAQMD's basic control measures. As described in Section 5.2.1.1, Air Pollutants of Concern, extended exposure to particulate matter can increase the risk of chronic respiratory

disease and would be a significant impact. PM_{10} bypasses the body's natural filtration system more easily than larger particles and can lodge deep in the lungs. $PM_{2.5}$ penetrates even more deeply into the lungs, and this is more likely to contribute to health effects at concentrations well below current PM_{10} standards. Health effects include premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). As discussed above for the proposed LRDP Update, Housing Project #1 would be required to comply with CBP AIR-2, which would require the project to implement BAAQMD's fugitive dust basic control measures. Impacts would be *less than significant* with implementation of CBP AIR-2, which ensures continued implementation of BAAQMD's fugitive dust basic control measures.

Construction Exhaust Emissions

Construction emissions are based on the preliminary construction schedule developed for Housing Project #1. Activities that would take place are demolition and demolition haul, site preparation, grading and grading soil haul, building construction, paving, and architectural coating. To determine potential construction-related air quality impacts, criteria air pollutants generated by project-related construction activities are compared to BAAQMD's significance thresholds. Average daily emissions are based on the annual construction emissions divided by the total number of active construction days (739 workdays). Additionally, Table 5.2-14, Housing Project #1 Construction-Related Criteria Air Pollutant Emissions Estimates, includes the total combined long-term emissions of both Housing Projects #1 and #2. In order to provide a conservative estimate of the average daily construction emissions associated with the Housing Projects #1 and #2, the significance determination is based on the combined Housing Projects #1 and #2 emissions. As shown in Table 5.2-14, Housing Project #1 Construction-Related Criteria Air Pollutant Emissions Estimates, criteria air pollutant emissions from construction equipment exhaust associated with Housing Project #1 would not generate emissions that exceed BAAQMD's average daily thresholds. Similarly, and overall, the combined emissions associated with both Housing Projects #1 and #2 (as shown on Tables 5.2-14 and 5.2-16) would not exceed the BAAQMD regional significance thresholds for exhaust emissions. Therefore, construction-related criteria pollutant emissions from exhaust would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1 Operation

Typical long-term air pollutant emissions are generated by area sources (e.g., landscape fuel use, aerosols, architectural coatings, and asphalt pavement), energy use (natural gas), energy use (natural gas), and mobile sources (i.e., on-road vehicles). Operation of proposed Housing Project #1 would generate long-term air pollutant emissions associated with project-related vehicle trips (e.g., vendors, patrons, and residents), application of architectural paints, landscape equipment use, and household products (area sources). The proposed Housing Project #1 project would generate a total of 367 ADTs per day and 984 VMT per day. Table 5.2-15, Housing Project #1 Operational Emissions (Year 2024), shows the criteria air pollutant emissions associated with operation of proposed Housing Project #1. Additionally, the table includes the total combined long-term emissions of both Housing Projects #1 and #2.

TABLE 5.2-15 HOUSING PROJECT #1 OPERATIONAL EMISSIONS (YEAR 2024)

Sector	Average Pounds per Day			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Area	13	<1	<1	<1
Energy ^a	0	0	0	0
On-Road Mobile ^b	1	<1	1	<1
Housing Project #1	13	<1	1	<1
Combined Housing Project #1 and #2	31	2	3	1
BAAQMD Average Daily Threshold	54	54	82	54
Exceeds Average Daily Threshold	No	No	No	No

	Tons per Year			
	VOC	NO _x	PM ₁₀	PM _{2.5}
Housing Project #1 Total	2	<1	<1	<1
Combined Housing Project #1 and #2	6	<1	1	<1
BAAQMD Annual Threshold	10	10	15	10
Exceeds Annual Threshold	No	No	No	No

Notes: Emissions may not total to 100 percent due to rounding.

a. The proposed buildings for Housing Project #2 would be all electric.

b. Vehicle emission rates are based on calendar year 2024 vehicle emissions data obtained from CARB's EMFAC2017 Version 1.0.3 web database and adjusted based on methodology provided in Appendix A of the CalEEMod User's Guide. Additionally, the emission rates for the LDA, LDT1, LDT2, and MDV vehicle classes account for the SAFE adjustment factors released by CARB.

Source: CalEEMod 2016.3.2.25

For purposes of this analysis, the significance determination is based on the combined Housing Projects #1 and #2 emissions. As shown in the table, the operational emissions generated by Housing Project #1 would not exceed the BAAQMD daily pounds per day or annual tons per year project level threshold. Similarly, and overall, the combined Housing Project #1 and Housing Project #2 operational emissions (as seen by adding the values in Table 5.2-15 and 5.2-17) would also not exceed the BAAQMD daily and annual regional significance thresholds. Therefore, operation of Housing Project #1 in addition to operation of both Housing Projects #1 and #2, would not cumulatively contribute to the nonattainment designations of the SFBAAB. Project-related operation activities to the regional air quality would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Housing Project #2 Construction

Construction activities produce combustion emissions from various sources, such as on-site heavy-duty construction vehicles, vehicles hauling materials to and from the site, and motor vehicles transporting the construction crew. Site preparation activities produce fugitive dust emissions (PM₁₀ and PM_{2.5}) from demolition and soil-disturbing activities as well as grading. Construction of the proposed Housing Project

#2 would require demolition and removal of an existing restroom building and paved surfaces, site preparation and grading of the project site, and construction of the proposed components. Construction of proposed Housing Project #2 would be approximately 18 months. Air pollutant emissions from construction activities on-site would vary daily as construction activity levels change. Construction activities associated with Housing Project #2 would result in emissions of ROG, NO_x, CO, PM₁₀, and PM_{2.5}. An estimate of construction emissions associated with Housing Project #2 are shown in Table 5.2-16, Housing Project #2 Construction-Related Criteria Air Pollutant Emissions Estimates.

TABLE 5.2-16 HOUSING PROJECT #2 CONSTRUCTION-RELATED CRITERIA AIR POLLUTANT EMISSIONS ESTIMATES

Year	Criteria Air Pollutants (tons/year) ^a					
	ROG	NO _x	Fugitive PM ₁₀ ^b	Exhaust PM ₁₀	Fugitive PM _{2.5} ^b	Exhaust PM _{2.5} ^b
2023	<1	2	<1	<1	<1	<1
2024	3	1	<1	<1	<1	<1
Housing Project #2 Total	3	2	<1	<1	<1	<1
Housing Project #1 and #2	8	9	2	<1	1	<1

Criteria Air Pollutants (average lbs/day) ^a						
Housing Project #2 ^c	21	14	1	1	<1	<1
Housing Project #1 and #2 ^d	20	23	5	1	1	1
BAAQMD Threshold	54	54	BCMs	82	BCMs	54
Exceeds Average Daily Threshold	No	No	N/A	No	N/A	No

Notes: BCM = Basic Control Measures; N/A = not applicable; emissions may not total to 100 percent due to rounding; Shading represents the fugitive dust component of the emissions that are mitigated through BAAQMD's BCs. Modeling does not include new Mitigation Measure AIR-2.1, which requires use of Tier 4 equipment for engines 50 horsepower and higher.

a. Construction phasing and equipment mix are based on the preliminary information provided and verified by UC Berkeley. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by South Coast Air Quality Management District of construction equipment and phasing for comparable projects.

b. Includes implementation of CBP AIR-2, which requires application of BAAQMD basic control measures for fugitive dust control such as watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, and street sweeping. Implementation of BAAQMD construction basic control measures is considered to result in construction-related fugitive dust emissions that are acceptable.

c. Average daily emissions are based on the total construction emissions divided by the total number of active construction days. The total number of construction days is estimated to be 333 workdays.

d. The total number of nonoverlapping construction days is estimated to be 787 workdays.

Source: California Emissions Estimator Model (CalEEMod), Version 2016.3.2.25

The emissions in Table 5.2-16 for each project include the implementation of CBP AIR-2 which is required by regulation or as standard practice. As identified previously, CBPs are specific approaches or methods on a particular environmental topic that have been determined to be the most effective and practical means of preventing or reducing environmental impacts. Additionally, the table includes the total combined long-term emissions of both Housing Projects #1 and #2 (i.e., Housing Project #1 "total" from Table 5.2-14 and Housing Project #2 "total" from Table 5.2-16). In order to provide a conservative estimate of average daily

emissions associated with the Housing Projects, the significance determination pertaining to construction exhaust emissions is based on the combined Housing Projects #1 and #2 emissions.

Fugitive Dust

Similar to Housing Project #1, ground-disturbing activities associated with Housing Project #2, such as site preparation and grading, would generate fugitive dust emissions (PM_{10} and $PM_{2.5}$). As stated in the impact discussion for the proposed LRDP Update and Housing Project #1, fugitive dust emissions are considered significant unless the project implements the BAAQMD's basic control measures for fugitive dust control during construction. In the absence of BAAQMD's basic control measures for fugitive dust control, PM_{10} and $PM_{2.5}$ levels downwind of actively disturbed areas could possibly exceed State standards. However, implementation of CBP AIR-2 requires application of BAAQMD basic control measures for fugitive dust control. Therefore, impacts would be *less than significant* with implementation of CBP AIR-2, which ensures continued implementation of BAAQMD's fugitive dust basic control measures.

Construction Exhaust Emissions

Like Housing Project #1, construction emissions are based on the preliminary construction schedule developed for Housing Project #2. Activities that would take place are demolition and demolition haul, site preparation, grading and grading soil haul, building construction, paving, and architectural coating. To determine potential construction-related air quality impacts, criteria air pollutants generated by project-related construction activities are compared to the BAAQMD significance thresholds related to exhaust emissions. Average daily emissions are based on the annual construction emissions divided by the total number of active construction days (333 workdays). Additionally, Table 5.2-16, Housing Project #2 Construction-Related Criteria Air Pollutant Emissions Estimates, includes the total combined long-term emissions of both Housing Projects #1 and #2. In order to provide a conservative estimate of the average daily construction emissions associated with the Housing Projects #1 and #2, the significance determination is based on the combined Housing Projects #1 and #2 emissions. As shown in Table 5.2-16, criteria air pollutant emissions from construction equipment exhaust associated with proposed Housing Project #2 would not generate emissions that exceed the BAAQMD regional significance thresholds. Similarly, and overall, the combined emissions associated with both Housing Projects #1 and #2 (as shown on Tables 5.2-14 and 5.2-16) would not exceed the BAAQMD regional significance thresholds for exhaust emissions. Therefore, construction-related criteria pollutant emissions from exhaust would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2 Operation

Typical long-term air pollutant emissions are generated by area sources (e.g., landscape fuel use, aerosols, architectural coatings, and asphalt pavement), energy use (natural gas), energy use (natural gas), and mobile sources (i.e., on-road vehicles). Operation of proposed Housing Project #2 would generate long-term air pollutant emissions associated with project-related vehicle trips (e.g., staff, vendors, patrons, and residents), application of architectural paints, landscape equipment use, and household products (area sources). The proposed Housing Project #2 would generate a total of 521 ADTs per day and 1,751 VMT per

day. Table 5.2-17, Housing Project #2 Operational Emissions (Year 2024), shows the criteria air pollutant emissions associated with operation of proposed Housing Project #2. Additionally, the table includes the total combined long-term emissions of both Housing Projects #1 and #2.

TABLE 5.2-17 HOUSING PROJECT #2 OPERATIONAL EMISSIONS (YEAR 2024)

Sector	Average Pounds per Day			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Area	15	<1	1	1
Energy ^a	0	0	0	0
On-Road Mobile ^b	1	1	1	<1
Housing Project #2	16	1	2	1
Housing Project #1 and #2	31	2	3	1
BAAQMD Average Daily Threshold	54	54	82	54
Exceeds Average Daily Threshold	No	No	No	No

	Tons per Year			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Housing Project #2	3	<1	<1	<1
Housing Project #1 and #2	6	<1	1	<1
BAAQMD Annual Project-Level Threshold	10	10	15	10
Exceeds Annual Threshold	No	No	No	No

Note: Emissions may not total to 100 percent due to rounding.

a. The proposed buildings for Housing Project #2 would be all electric.

b. Vehicle emission rates are based on calendar year 2024 vehicle emissions data obtained from CARB's EMFAC2017 Version 1.0.3 web database and adjusted based on methodology provided in Appendix A of the CalEEMod User's Guide. Additionally, the emission rates for the LDA, LDT1, LDT2, and MDV vehicle classes account for the SAFE adjustment factors released by CARB.

Source: CalEEMod 2016.3.2.25

For purposes of this analysis, the significance determination is based on the combined Housing Projects #1 and #2 emissions. As shown in the table, operational emissions generated by proposed Housing Project #2 would not exceed the BAAQMD daily and annual thresholds. Similarly, and overall, the combined Housing Project #1 and Housing Project #2 emissions would also not exceed the BAAQMD daily and annual regional significance thresholds. Therefore, regional air quality impacts associated with operation of Housing Project #1 and Housing Project #2 would be *less than significant*.

Significance without Mitigation: Less than significant.

AIR-3 The project would expose sensitive receptors to substantial pollutant concentrations.

If implementation of the proposed project would cause or contribute significantly to elevated pollutant concentration levels it could expose sensitive receptors to elevated pollutant concentrations. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

LRDP Update**LRDP Update Construction Off-Site Community Risk and Hazards**

Future construction within the scope of the proposed LRDP Update would temporarily elevate concentrations of TACs and diesel-PM_{2.5} in the vicinity of sensitive land uses during construction activities. Because the details regarding future construction activities are not known at this time—including phasing of future individual projects, construction duration and phasing, and preliminary construction equipment—construction emissions are evaluated qualitatively in accordance with BAAQMDs plan-level guidance. Potential future projects would be subject to the basic control measures related to reducing off-road construction equipment exhaust emissions. Specific actions include requiring off-road construction equipment to have diesel particulate filters installed and using electric-powered equipment. However, construction emissions associated with the proposed LRDP Update could exceed BAAQMD's project level and cumulative significance thresholds for community risk and hazards. This is because health risk associated with construction activities are primarily associated with construction equipment exhaust and DPM. The risk associated with use of large, off-road construction equipment increases depending on how close sensitive receptors are to construction activities, the number of equipment pieces used, and meteorological factors. For this programmatic evaluation, these site-specific conditions are not available. However, implementation of the proposed LRDP Update would require use of large construction equipment in close proximity to sensitive receptors. Therefore, construction-related health risk impacts associated with the proposed LRDP Update are considered *significant*.

Impact AIR-3: Construction activities associated with potential future development projects accommodated under the proposed LRDP Update could expose nearby receptors to substantial concentrations of toxic air contaminants.

Mitigation Measure AIR-3: Construction of projects subject to CEQA on sites one acre or greater, within 1,000 feet of residential and other sensitive land use projects (e.g., hospitals, schools, nursing homes, day care centers), as measured from the property line of the project to the property line of the source/edge of the sensitive land use, utilize off-road equipment of 50 horsepower or more and, that occur for more than 12 months of active construction (i.e., exclusive of interior renovations), shall require preparation of a construction health risk assessment (HRA) prior to future discretionary project approval, as recommended in the current HRA Guidance Manual prepared by the California Office of Environmental Health Hazard Assessment (OEHHA). The construction HRA shall generally be prepared in accordance with policies and procedures of the OEHHA and the Bay Area Air Quality Management District. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the

construction HRA shows that the incremental cancer risk exceeds 10 in a million ($10E-06$), $PM_{2.5}$ concentrations exceed $0.3 \mu\text{g}/\text{m}^3$, or the appropriate noncancer hazard index exceeds 1.0, the construction HRA shall be required to identify all feasible measures capable of reducing potential cancer and noncancer risks to an acceptable level to the extent feasible (i.e., below 10 in a million or a hazard index of 1.0), including appropriate enforcement mechanisms.

The construction health risk assessment shall be submitted to UC Berkeley's Office of Environment, Health & Safety for review and approval. Measures identified in the health risk assessment shall be included in grading plans prepared for the development projects. Compliance with these measures shall be verified during regular construction site inspections.

Significance with Mitigation: Significant and unavoidable. Implementation of Mitigation Measure AIR-2.1 previously described in impact discussion AIR-2, which requires use of Tier 4 (or higher) equipment, and Mitigation Measure AIR-3, which requires site-specific construction HRAs, would reduce construction-related health risk impacts of future development projects that implement the proposed LRDP Update to the extent feasible. However, despite implementation of these mitigation measures, construction-related health risk impacts may still exceed the applicable thresholds due to future project-specific circumstances. This is because the health risk associated with construction activities is driven by DPM, and the effect of DPM is largely a factor of how close construction activities are to sensitive receptors, how many large off-road diesel construction equipment are needed, and the duration of construction activities. These future site-specific circumstances are not known for this program-level evaluation. Accordingly, no additional mitigation measures are available to reduce this program-level impact to less-than-significant levels. Therefore, this impact remains *significant and unavoidable*. The identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects. However, due to the programmatic nature of the proposed LRDP Update, no additional mitigation measures are available, and the impact is considered *significant and unavoidable*.

LRDP Update Operation Community Risk and Hazards

The proposed LRDP Update would generate operational emissions of TACs from a variety of sources, as described under Section 5.2.3.1, Methodology. Figure 5.2-6, LRDP Update Residential (30-year) Cancer Risk Contours, identifies the potential cancer risk contours (calculated for the 30-year residential exposure) from emission sources anticipated at buildout of the proposed LRDP Update (existing sources plus additional sources resulting from proposed LRDP Update).



- Point of Maximum Impact (PMI)**
- Maximum Exposed Individual Receptor (MEIR)**
- Maximum Exposed Individual Worker (MEIW)**
- Maximum Exposed Sensitive Receptor**

EIR Study Area

0 200
Scale (Feet)



Note: Risks expressed as chances per million

Figure 5.2-6

LRDP Update, Residential (30-Year) Cancer Risk Contours

Similar to Figure 5.2-3, Existing Residential (30-Year) Cancer Risk Contours, Figure 5.2-6 depicts two areas where the excess cancer risk from all emission sources exceeds one chance per million (i.e., areas within the 1.0 cancer risk contour lines) and one area where the excess cancer risk exceeds ten chances per million (i.e., area within the 10.0 in a million contour line). Table 5.2-18, LRDP Update Operational Health Risk Assessment Results, presents the results summary at the PMI, MEIR, MEIW, and maximum exposed sensitive receptor.

TABLE 5.2-18 LRDP UPDATE OPERATIONAL HEALTH RISK ASSESSMENT RESULTS

Receptor	Project Level Risk		
	Cancer Risk (per million)	Chronic Hazards	Acute Hazards
Point of Maximum Impact (PMI)	24.6	0.064	0.20
Maximum Exposed Individual Resident (MEIR)	7.3	0.018	0.084
Maximum Exposed Individual Worker (MEIW)	0.7	0.052	0.12
Maximum Exposed Sensitive Receptor (Montessori Family School)	0.9	0.011	0.072
BAAQMD Threshold for Individual Sources	10	1.0	1.0
Exceeds Threshold?	No	No	No

Note: Cancer risk calculated using 2015 OEHHA Guidance Manual.

PMI and MEIR cancer risks are calculated for the 30-yr residential scenario. MEIW cancer risk calculated for 25-yr worker scenario. Maximum exposed sensitive receptor cancer risk calculated for 12-year student scenario (ages 3 to 14).

Source: HARP2, Air Dispersion Model and Risk Tool.

The Operational HRA predicted the PMI location along Oxford Street, north of Hearst Avenue and east of Warren Hall. This location does not have residential units. Therefore, the risk determination was based on the MEIR location. The HRA predicted the MEIR location north of the Campus Park, northeast of the intersection of Hearst Avenue and Spruce Street. The predicted MEIW location is south of the Campus Park along Bancroft Way, west of Telegraph Avenue. The predicted maximum exposed sensitive receptor is the Montessori Family School, north of the Campus Park on Hearst Avenue.

Cancer risk is the estimated probability of a maximally exposed receptor developing cancer as a result of exposure to TACs over a period of 30 years for residential locations and 25 years for worker locations. For the Montessori Family School, an exposure duration of 12 years was selected because the school has programs for early childhood (ages 3 to 5) through middle school (grades 6 to 8, ages 12 to 14).

The results in Table 5.2-18, LRDP Update Operational Health Risk Assessment Results, show that the predicted health risks are less than BAAQMD's significance thresholds for the MEIR, MEIW, and maximum exposed sensitive receptor. At the MEIR, DPM emissions from the emergency generators account for approximately 80.3 percent of the total health risks. Emissions from the cogeneration plant account for approximately 10 percent, laboratory emissions account for approximately 9.6 percent, and emissions from the HMF account for the remaining 0.1 percent of the total MEIR health risks.

The cogeneration plant represents the primary source of natural gas combustion at UC Berkeley. Implementation of the Campus Energy Plan would result in a reduction in natural gas combustion on-site (see Table 5.2-13, Cogeneration Plant Emissions Reductions from Implementation of the Campus Energy Plan). Therefore, future health risks from the cogeneration plant emissions would be reduced with implementation of the Campus Energy Plan compared to the risks in Table 5.2-18, LRDP Update Operational Health Risk Assessment Results, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Truck Deliveries

Implementation of the proposed LRDP Update would result in an increase in vendor deliveries to the UC Berkeley campus that would include diesel-powered trucks. At buildout, there is anticipated to be a 2 percent increase in vendor VMT. These sources represent a *less-than-significant* source of TACs at the UC Berkeley campus.

Significance without Mitigation: Less than significant.

LRDP Update: CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO, called hotspots. These pockets have the potential to exceed the State 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm. Because CO is produced in the greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to AAQS is typically demonstrated through an analysis of localized CO concentrations. Hotspots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds.

The proposed LRDP Update would be consistent with ABAG/MTC's Plan Bay Area goals to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth in outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle VMT and associated GHG emissions reductions.

Furthermore, under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact.⁵¹ Based on the traffic analysis conducted as part of this environmental analysis, the proposed LRDP Update would generate a maximum increase of 2,117 daily vehicle trips on roadway segments. Peak hour vehicle trips are typically 10 percent of daily volumes; therefore, the proposed LRDP Update would not increase traffic volumes at affected intersections by more than the BAAQMD screening criteria of 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited.⁵²

⁵¹ Bay Area Air Quality Management District, 2017 (Revised). *CEQA Air Quality Guidelines*.

⁵² Based on information provided by Fehr & Peers.

Overall, the proposed project would not have the potential to substantially increase CO hotspots at intersections in the project vicinity. Localized air quality impacts related to mobile-source emissions would therefore be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Housing Project #1: Construction Off-Site Community Risks and Hazards

Housing Project #1 would elevate concentrations of TACs and construction exhaust PM_{2.5} in the vicinity of sensitive land uses (i.e., receptors) during construction activities. The nearest off-site sensitive receptors to the project site include the residences surrounding the project site. Construction activities would occur within 1,000 feet of these sensitive receptor locations. Consistent with Mitigation Measure AIR-3, a construction HRA for TACs and construction exhaust PM_{2.5} was prepared for Housing Project #1 and is included in Appendix D2, Housing Project #1 (Anchor House) Construction Health Risk Assessment, of this Draft EIR. Figure 5.2-7, Project Site and Off-Site Receptor Locations of Housing Project #1 Construction HRA, shows the project site and anticipated truck haul route in relation to the maximum exposed receptors considered for the analysis.

Results of the analysis are shown in Table 5.2-19, Housing Project #1 Construction Health Risk Assessment Results: without Mitigation, that are modeled without implementation of Mitigation Measure AIR-2.1 on project-level construction health risk for Housing Project #1.

TABLE 5.2-19 HOUSING PROJECT #1 CONSTRUCTION HEALTH RISK ASSESSMENT RESULTS: WITHOUT MITIGATION

Receptor	Project Level Risk		
	Cancer Risk (per million)	Chronic Hazards	Construction Exhaust PM _{2.5} (µg/m ³)
Maximum Exposed Individual Resident (MEIR)	20.2	0.058	0.08
BAAQMD Threshold	10	1.0	0.3 µg/m ³
Exceeds Threshold?	Yes	No	No

Notes: micrograms per cubic meter = µg/m³; PM_{2.5} – fine particulate matter. Modeling does not include Mitigation Measure AIR-2.1, which requires use of Tier 4 equipment for engines 50 horsepower and higher. Cancer risk calculated using 2015 Office of Environmental Health Hazard Assessment Health Risk Assessment Guidance Manual.

Source: PlaceWorks, 2020.

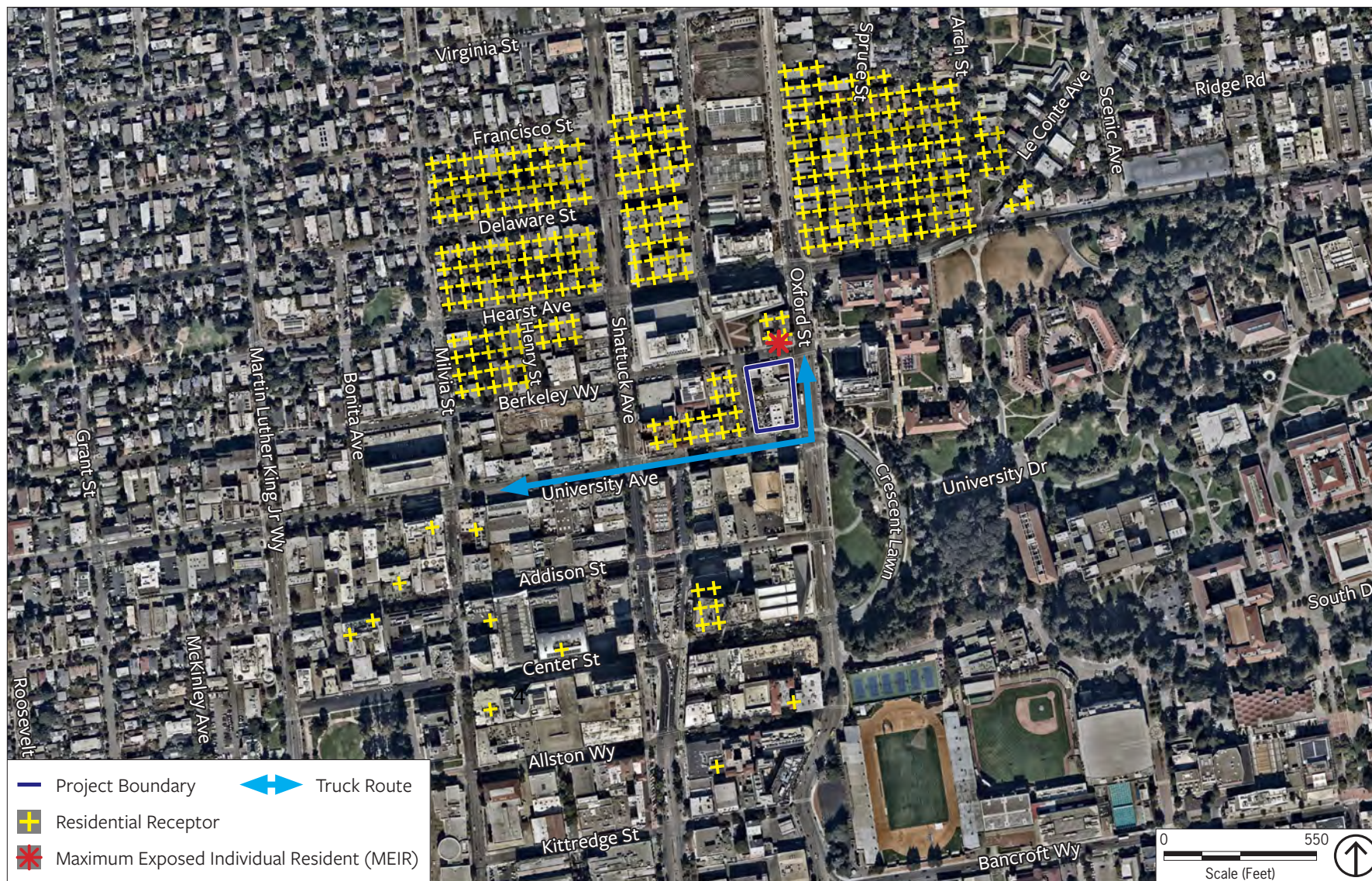


Figure 5.2-7
Project Site and Off-Site Receptor Locations of Housing Project #1 Construction HRA

The health risk results from Housing Project #1 construction activities are summarized as follows:

- Cancer risk for the maximum exposed individual resident (MEIR), a multifamily development immediately north of the site along Berkeley Way, from unmitigated construction activities related to the project were calculated to be 20.2 in a million and would exceed the 10 in a million significance threshold. Using the latest 2015 OEHHA Guidance Manual, the calculated total cancer risk conservatively assumes that the risk for the MEIR consists of a pregnant woman in the third trimester who gives birth during the approximately 34-month construction period; therefore, all calculated risk values were multiplied by a factor of 10 for the first 27 months and then multiplied by a factor of 3 for the remaining 7 months. In addition, it was conservatively assumed that the residents were outdoors eight hours a day, 260 construction days per year, and were exposed to all daily construction emissions.
- For noncarcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one for off-site sensitive receptors. Therefore, chronic noncarcinogenic hazards are less than significant.
- The maximum annual PM_{2.5} concentration of 0.08 µg/m³ at the MEIR does not exceed the BAAQMD significance threshold of 0.3 µg/m³. Therefore, impacts from PM_{2.5} concentrations are less than significant.

As shown in Table 5.2-19, prior to implementation of Mitigation Measure AIR-2.1, cancer risk impacts at the MEIR could be significant because the cancer risk of 20.2 in a million at the MEIR would exceed the BAAQMD 10 in a million significance threshold. However, implementation of Mitigation Measure AIR-2.1, which requires Tier 4 equipment for engines 50 horsepower and higher, would reduce cancer risk impacts to the MEIR from 20.2 in a million to 1.1 in a million. Thus, cancer risk at the MEIR would be reduced to below the BAAQMD cancer risk threshold of 10 in a million. The health risk values with implementation Mitigation Measure AIR-2.1 are summarized in Table 5.2-20, Housing Project #1 Construction Health Risk Assessment Results: with Mitigation. Therefore, cancer risk impacts from project-related construction activities would be reduced to *less-than-significant* levels.

TABLE 5.2-20 HOUSING PROJECT #1 CONSTRUCTION HEALTH RISK ASSESSMENT RESULTS: WITH MITIGATION

Receptor	Project Level Risk		
	Cancer Risk (per million)	Chronic Hazards	Construction Exhaust PM _{2.5} (µg/m ³)
Maximum Exposed Individual Resident (MEIR)	1.1	0.004	0.007
BAAQMD Threshold	10	1.0	0.3 µg/m ³
Exceeds Threshold?	No	No	No

Notes: micrograms per cubic meter = µg/m³; PM_{2.5} – fine particulate matter. Modeling includes Mitigation Measure AIR-2.1, which requires use of Tier 4 equipment for engines 50 horsepower and higher. Cancer risk calculated using 2015 Office of Environmental Health Hazard Assessment Health Risk Assessment Guidance Manual.

Source: PlaceWorks, 2020.

Significance with Mitigation: Less than significant.

Housing Project #1: Operation Off-Site Community Risk and Hazards

Exposure to elevated concentrations of vehicle-generated PM_{2.5} and TACs at sensitive land uses have been identified by CARB, the California Air Pollution Control Officer's Association, and BAAQMD as a potential air quality hazard. The types of uses that could create new major sources of TACs are industrial, manufacturing, and warehousing uses. Housing Project #1 would primarily involve development of housing in addition to a small commercial component and thus would not include the type of land uses typically associated with major sources of TACs. While the proposed building would include a diesel-fired emergency generator, it is not anticipated to be a major source of TACs due to its limited use.⁵³ Furthermore, any emergency generator installed on-site would be required to comply with BAAQMD permitting regulations (i.e., Regulation 2), which imposes limits on maintenance and reliability run-time hours. Therefore, operation-related health risk impacts associated with Housing Project #1 would be *less than significant*.

Significance with Mitigation: Less than significant.

Housing Project #1: CO Hotspots

Housing Project #1 would provide student housing and concentrate development in an area where there are existing services and infrastructure rather than allocate new growth in outlying areas. Thus, Housing Project #1 would be consistent with the overall goal of ABAG/MTC's Plan Bay Area. Furthermore, it would not conflict with the CMP because it would not hinder the capital improvements outlined in Alameda CTC's 2019 CMP or alter regional travel patterns.⁵⁴ Moreover, based on the traffic analysis conducted as part of this environmental analysis, proposed Housing Project #1 would generate a maximum increase of 367 daily vehicle trips on roadway segments. Peak hour vehicle trips are typically 10 percent of daily volumes; therefore, the Housing Project #1 would not increase traffic volumes at affected intersections by more than BAAQMD screening criteria of 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited.⁵⁵ Overall, Housing Project #1 would not have the potential to substantially increase CO hotspots at intersections in the project vicinity. Similarly, the combined maximum increase of 888 daily vehicle trips associated with both Housing Projects #1 and #2 would also not result in peak hour trips in excess of the BAAQMD screening criteria. Therefore, as with the proposed LRDP Update, localized air quality impacts related to mobile-source emissions would be *less than significant*.

Significance without Mitigation: Less than significant.

⁵³ Emergency generators associated with Housing Project #1 and Housing Project #2 were included in the LRDP Update Health Risk Assessment (Appendix D1 of this Draft EIR).

⁵⁴ Alameda County Transportation Commission, 2019, September, Congestion Management Program Report. https://www.alamedactc.org/wp-content/uploads/2019/11/2019_Alameda_County_CMP_FINAL.pdf.

⁵⁵ Based on information provided by Fehr & Peers.

Housing Project #2

Housing Project #2 Construction Off-Site Community Risk and Hazards

Housing Project #2 would elevate concentrations of TACs and construction exhaust PM_{2.5} in the vicinity of sensitive land uses (i.e., receptors) during construction activities. The nearest off-site sensitive receptors to the project site include the residential, daycare, and elementary school surrounding the project site. Construction activities would occur within 1,000 feet of these sensitive receptor locations. Consistent with Mitigation Measure AIR-3, a construction HRA for TACs and construction exhaust PM_{2.5} was prepared for Housing Project #2 and is included in Appendix D3, Housing Project #2 (People's Park) Construction Health Risk Assessment, of this Draft EIR. Figure 5.2-8, Project Site and Off-Site Receptor Locations of Housing Project #2 Construction HRA, shows the project site and anticipated truck haul route in relation to the maximum exposed receptors considered for the analysis.

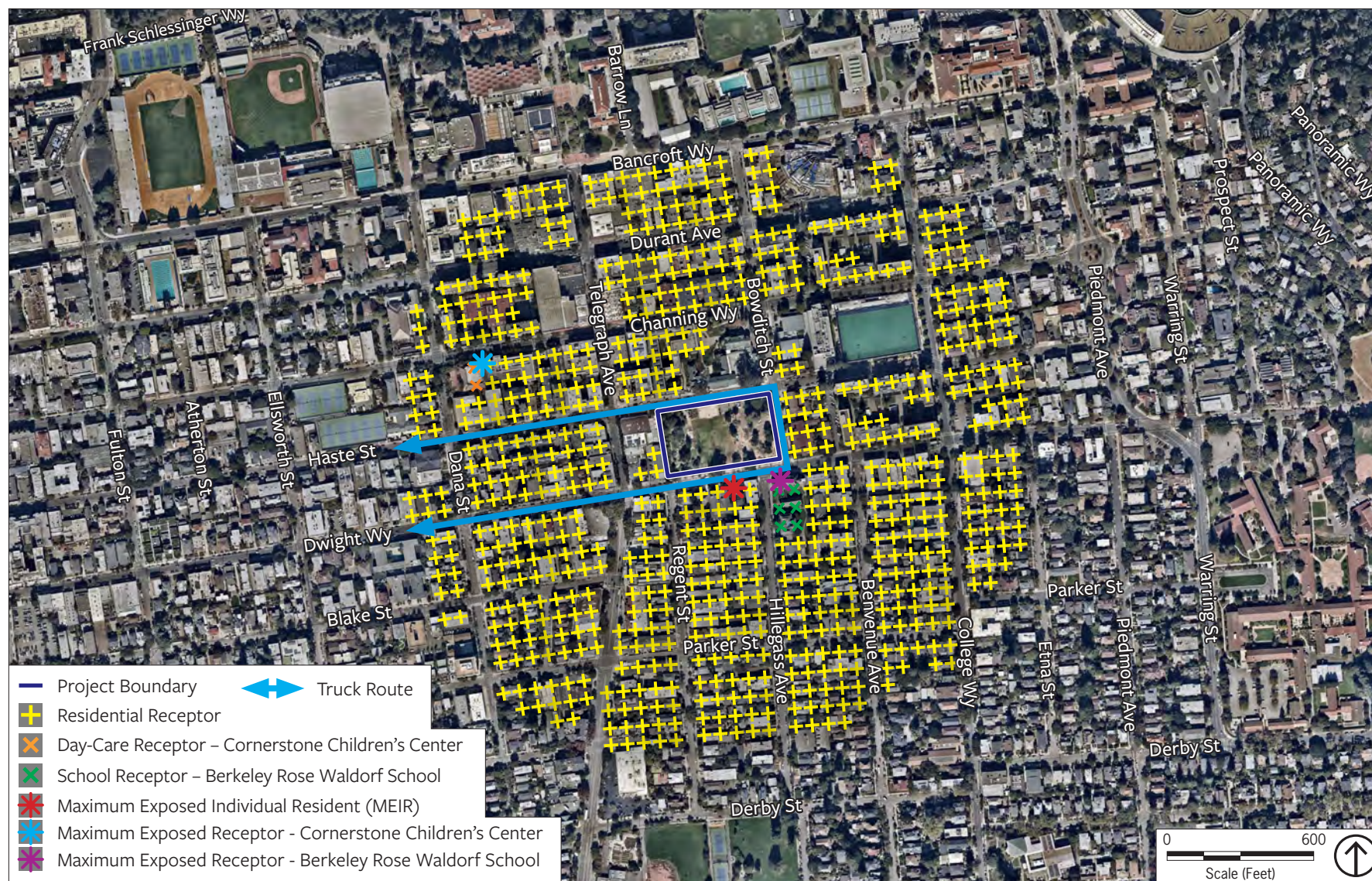
Results of the analysis are shown in Table 5.2-21, Housing Project #2 Construction Health Risk Assessment Results: without Mitigation, and are modeled without implementation of Mitigation Measure AIR-2.1 on project-level construction health risk for Housing Project #2.

TABLE 5.2-21 HOUSING PROJECT #2 CONSTRUCTION HEALTH RISK ASSESSMENT RESULTS: WITHOUT MITIGATION

Receptor	Cancer Risk (per million)	Chronic Hazards	Construction Exhaust PM _{2.5} (µg/m ³)
Maximum Exposed Individual Resident (MEIR)	12.3	0.03	0.11
Maximum Exposed Sensitive Receptor – Cornerstone Children's Center (Day Care Student)	0.36	0.01	0.003
Maximum Exposed Sensitive Receptor – Berkeley Rose Waldorf School (Student)	1.4	0.3	0.12
BAAQMD Threshold	10	1.0	0.30
Exceeds Threshold?	Yes	No	No

Notes: micrograms per cubic meter = µg/m³; PM_{2.5} – fine particulate matter. Modeling does not include Mitigation Measure AIR-2.1, which requires use of Tier 4 equipment for engines 50 horsepower and higher. Cancer risk calculated using 2015 Office of Environmental Health Hazard Assessment Health Risk Assessment Guidance Manual.

Source: PlaceWorks, 2020.



Source: Nearmap, 2020. PlaceWorks, 2021.

Figure 5.2-8
Project Site and Off-Site Receptor Locations of Housing Project #2 Construction HRA

The health risk results from Housing Project #2 construction activities are summarized as follows:

- Cancer risk for the maximum exposed individual resident (MEIR), a multifamily development immediately south of the site along Dwight Way, from unmitigated construction activities related to the proposed project were calculated to be 12.3 in a million, which exceeds the 10 in a million significance threshold. Using the latest 2015 OEHHA Guidance Manual, the calculated total cancer risk conservatively assumes that the risk for the MEIR consists of a pregnant woman in the third trimester who gives birth during the approximately 18-month construction period; therefore, all calculated risk values were multiplied by a factor of 10. In addition, it was conservatively assumed that the residents were outdoors eight hours a day, 260 construction days per year and were exposed to all of the daily construction emissions.
- The cancer risks for the maximum exposed sensitive receptors at the Cornerstone Children's Center and the Berkeley Rose Waldorf School were 0.36 and 1.4 in a million, respectively, and would not exceed the 10 in a million significance threshold.
- For noncarcinogenic effects, the chronic hazard index identified for each toxicological endpoint totaled less than one for all the off-site sensitive receptors. Therefore, chronic noncarcinogenic hazards are less than significant.
- For the MEIR, the maximum annual PM_{2.5} concentration of 0.11 µg/m³ does not exceed the BAAQMD significance threshold of 0.3 µg/m³.
- For the maximum exposed sensitive receptors at the Cornerstone Children's Center and the Berkeley Rose Waldorf School, the maximum annual PM_{2.5} concentrations of 0.003 µg/m³ and 0.12 µg/m³, respectively, do not exceed the threshold of 0.3 µg/m³. Therefore, impacts from PM_{2.5} concentrations are less than significant.

As shown in Table 5.2-21, prior to implementation of Mitigation Measure AIR-2.1, cancer risk impacts at the MEIR could be significant because the cancer risk of 12.3 in a million at the MEIR would exceed the BAAQMD 10 in a million significance threshold. However, implementation of Mitigation Measure AIR-2.1 requires Tier 4 equipment for engines 50 horsepower and higher, would reduce cancer risk impacts to the MEIR from 12.3 in a million to 5.2 in a million. Thus, cancer risk at the MEIR would be reduced to below the BAAQMD cancer risk threshold of 10 in a million. The health risk values with implementation of Mitigation Measure AIR-2.1 are summarized in Table 5.2-22, Housing Project #2 Construction Health Risk Assessment Results: with Mitigation. Therefore, cancer risk impacts from project-related construction activities would be reduced to *less-than-significant* levels.

TABLE 5.2-22 HOUSING PROJECT #2 CONSTRUCTION HEALTH RISK ASSESSMENT RESULTS: WITH MITIGATION

Receptor	Cancer Risk (per million)	Chronic Hazards	PM _{2.5} (µg/m ³)
Maximum Exposed Individual Resident (MEIR)	5.2	0.01	0.04
BAAQMD Threshold	10	1.0	0.30
Exceeds Threshold?	No	No	No

Notes: micrograms per cubic meter = µg/m³; PM_{2.5} = fine particulate matter. Modeling includes Mitigation Measure AIR-2.1, which requires use of Tier 4 equipment for engines 50 horsepower and higher. Cancer risk calculated using 2015 Office of Environmental Health Hazard Assessment Health Risk Assessment Guidance Manual.

Source: PlaceWorks, 2020.

Significance without Mitigation: Less than significant.

Housing Project #2: Operation Off-Site Community Risk and Hazards

Exposure to elevated concentrations of vehicle-generated PM_{2.5} and TACs at sensitive land uses has been identified by CARB, the California Air Pollution Control Officer's Association, and BAAQMD as a potential air quality hazard. The types of uses that could create new major sources of TACs are industrial, manufacturing, and warehousing uses. Housing Project #2 would primarily involve development of housing in addition to a small retail component and thus would not include the type of land uses that are typically associated with major sources of TACs. In addition, the proposed buildings would be electric powered. While the proposed buildings would still include a diesel-fired emergency generator, it is not anticipated to be a major source of TACs due to its limited use.⁵⁶ Furthermore, any emergency generator installed on-site would be required to comply with BAAQMD permitting regulations (i.e., Regulation 2), which imposes limits on maintenance and reliability run-time hours. Therefore, operation-related health risk impacts associated with Housing Project #2 are considered *less than significant*.

Significance with Mitigation: Less than significant.

Housing Project #2: CO Hotspots

Housing Project #2 would provide student and faculty/staff housing and concentrate development in an area where there are existing services and infrastructure rather than allocate new growth in outlying areas. Thus, Housing Project #2 would be consistent with the overall goal of ABAG/MTC's Plan Bay Area. Furthermore, it would not conflict with the CMP because it would not hinder the capital improvements outlined in Alameda CTC's 2019 CMP or alter regional travel patterns.⁵⁷ Moreover, based on the traffic analysis conducted as part of this environmental analysis, proposed Housing Project #2 would generate a maximum increase of 521 daily vehicle trips on roadway segments. Peak hour vehicle trips are typically 10 percent of daily volumes; therefore, the proposed LRDP Update would not increase traffic volumes at affected intersections by more than the BAAQMD screening criteria of 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited.⁵⁸ Overall, Housing Project #2 would not have the potential to substantially increase CO hotspots at intersections in the project vicinity. Similarly, the combined maximum increase of 888 daily trips associated with both Housing Projects #1 and #2 would not result in peak hour vehicle trips in excess of the BAAQMD screening criteria. Therefore, as with the proposed LRDP Update, localized air quality impacts related to mobile-source emissions would be *less than significant*.

Significance without Mitigation: Less than significant.

⁵⁶ Emergency generators associated with Housing Project #1 and Housing Project #2 were included in the LRDP Update Health Risk Assessment (Appendix D1 of this Draft EIR).

⁵⁷ Alameda County Transportation Commission, 2019, September, Congestion Management Program Report. https://www.alamedactc.org/wp-content/uploads/2019/11/2019_Alameda_County_CMP_FINAL.pdf.

⁵⁸ Based on information provided by Fehr & Peers.

AIR-4	The project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
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LRDP Update

Potential impacts could occur if new sources of nuisance odors are placed near sensitive receptors. Table 5.2-23, BAAQMD Odor Screening Distances, identifies screening distances from potential sources of objectionable odors within the SFBAAB. Odors from these types of land uses are regulated under BAAQMD Regulation 7, Odorous Substances.⁵⁹

TABLE 5.2-23 BAAQMD ODOR SCREENING DISTANCES

Land Use/Type of Operation	Screening Distance
Wastewater Treatment Plan	2 miles
Wastewater Pumping Facilities	1 mile
Sanitary Landfill	2 miles
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	2 miles
Chemical Manufacturing	2 miles
Fiberglass Manufacturing	1 mile
Painting/Coating Operations	1 mile
Rendering Plant	2 miles
Coffee Roaster	1 mile
Food Processing Facility	1 mile
Confined Animal Facility/Feed Lot/ Dairy	1 mile
Green Waste and Recycling Operations	1 mile
Metal Smelting Plants	2 miles

Source: Bay Area Air Quality Management District, 2017, California Environmental Quality Act Air Quality Guidelines, Table 3-3, Odor Screening Distances, and associated Appendix D of these Guidelines. https://www.baaqmd.gov/-/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

⁵⁹ It should be noted that while restaurants can generate odors, these sources are not identified by BAAQMD as nuisance odors since they typically do not generate significant odors that affect a substantial number of people. Larger restaurants that employ five or more people are subject to BAAQMD Regulation 7, Odorous Substances.

The proposed LRDP Update would not generate substantial odors that would affect a substantial number of people. It does not include projects that fall under the categories listed in Table 5.2-23. During operation, cafeterias could generate odors from cooking, but such odors are not substantial enough to be considered nuisance odors that would affect a substantial number of people. Furthermore, nuisance odors are regulated under BAAQMD Regulation 7, Odorous Substances, which requires abatement of any nuisance generating an odor complaint. BAAQMD's Regulation 7, Odorous Substances, places general limitations on odorous substances and specific emission limitations on certain odorous compounds.⁶⁰ In addition, odors are regulated under BAAQMD Regulation 1, Rule 1-301, Public Nuisance. Compliance with BAAQMD Regulation 7 would ensure that odor impacts are minimized to a *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

Housing Projects #1 and #2 would involve construction of new residential housing and associated amenities. Based on the scope and nature of the projects, these new residences and associated amenities would not be facilities that generate substantial odors that would affect a substantial number of people. The type of facilities that are typically considered to have objectionable odors include wastewater treatment plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities (see Table 5.2-23, BAAQMD Odor Screening Distances. Residential, commercial, office, and other UC Berkeley uses are not associated with foul odors that constitute a public nuisance. Though proposed uses could generate odors from cooking, such odors are not substantial enough to be considered nuisance odors that would affect a substantial number of people. Additionally, existing regulations and design standards regarding trash enclosures and regular service would minimize odors from garbage disposal. Therefore, odor impacts associated with operation of Housing Projects #1 and #2 would be *less than significant*.

During project-related construction activities on the project sites, construction equipment exhaust and application of asphalt and architectural coatings would temporarily generate odors. Any construction-related odor emissions would be temporary and intermittent. Additionally, noxious odors would be confined to the immediate vicinity of the construction equipment. By the time such emissions reach any sensitive receptor sites, they would be diluted to well below any level of air quality concern. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

⁶⁰ It should be noted that while restaurants can generate odors, these sources are not identified by BAAQMD as nuisance odors since they typically do not generate significant odors that affect a substantial number of people. Larger restaurants that employ five or more people are subject to BAAQMD Regulation 7, Odorous Substances.

AIR-5	The proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in a cumulative impact with respect to toxic air contaminants.
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LRDP Update

Criteria Air Pollutants and BAAQMD's Nonattainment Designations

The cumulative area of analysis is the SFBAAB. As identified in Section 5.3.1, Environmental Setting, California is divided into air basins for the purpose of managing the air resources of the state based on regional meteorological and geographic conditions. Similar to GHG emissions impacts, air quality impacts are regional in nature because no single project generates enough emissions to cause an air basin to be designated nonattainment. Therefore, cumulative impacts are identified in impact discussion AIR-2.

Toxic Air Contaminants

Additional major sources of TACs in the vicinity of UC Berkeley include emissions from Lawrence Berkeley National Laboratory and mobile sources such as freeways (I-80, I-580, SR-24), railroads, and major-volume roadways (> 30,000 average daily trips). BAAQMD provides screening tools to assess cancer risks (30-year residential exposure) and fine particulate matter (PM_{2.5}) concentrations within the air basin.⁶¹

The cumulative health risk values were determined by adding the health risk values from the proposed LRDP Update to the screening-level health risk values for several additional major emission sources (see Table 5.2-24, Cumulative Operational Health Risk Assessment Results). The cumulative health risk values are less than the BAAQMD threshold of 100 in a million for a lifetime cancer risk and less than the noncarcinogenic chronic or acute hazard index of 10.0. Additionally, the PM_{2.5} concentrations for all emission sources are below the cumulative BAAQMD significance threshold of 0.8 µg/m³.

⁶¹ Bay Area Air Quality Management District, 2020, Cancer Risk and PM_{2.5} Raster Files for highways, railroads, and major streets. Provided by Ms. Areana Flores, Environmental Planner for BAAQMD on June 20, 2020. It should be noted that non-cancer hazards for these sources are not provided by BAAQMD as they are predicted below BAAQMD's significance thresholds for individual sources (< 1.0 chronic or acute hazards).

TABLE 5.2-24 CUMULATIVE OPERATIONAL HEALTH RISK ASSESSMENT RESULTS

Source	Cancer Risk (per million)	Chronic Hazards	Acute Hazards	PM _{2.5} (µg/m ³)
LRDP Update ^a	7.3	0.018	0.084	n/a
Construction: Housing Project ^a	1.1	0.004	n/a	0.007
Construction: Housing Project ^b	5.2	0.010	n/a	0.04
Lawrence Berkeley National Laboratory ^b	8.0	0.1	0.1	n/a
Freeways ^c	3.7	<1.0	<1.0	0.09
Railroads ^c	1.3	<1.0	<1.0	0.002
Major Surface Streets ^c	46.5	<1.0	<1.0	0.17
<i>Total – All Sources</i>	<i>73.1</i>	<i>0.13</i>	<i>0.18</i>	<i>0.31</i>
BAAQMD Threshold	100	10.0	10.0	0.80
Exceeds Threshold?	No	No	No	No

Notes: micrograms per cubic meter = µg/m³; PM_{2.5} – fine particulate matter; Cancer risk calculated residential receptors using 2015 Office of Environmental Health Hazard Assessment Health Risk Assessment Guidance Manual.

Sources:

a. HARP2, Air Dispersion Model and Risk Tool.

b. Lawrence Berkeley National Laboratory, EIR for 2006 LRDP, Section IV.B. Air Quality. Dated January 22, 2007. Prepared by ESA.

c. BAAQMD, Cancer Risk/PM_{2.5} Screening-Level Raster Files for Highway, Railroad, and Major Streets (2020).

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. These impacts are incorporated into the analysis of the proposed LRDP Update under impact discussions AIR-1 through AIR-5. However, unlike the proposed LRDP Update, implementation of Housing Project #1 and Housing Project #2 would not exceed the BAAQMD regional significance thresholds (see Table 5.2-15, Housing Project #1 Operational Emissions [Year 2024], and Table 5.2-17, Housing Project #2 Operational Emissions [Year 2024]); therefore, the cumulative contributions of these individual projects are *less than significant*.

Significance without Mitigation: Less than significant.

5.3 BIOLOGICAL RESOURCES

This chapter describes the potential biological resource impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential biological resource impacts, and identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant environmental impacts.

Biological resources in the EIR Study Area were identified through a review of available information, including the EIR for the current LRDP,¹ environmental documents on specific developments on the Campus Park and surrounding areas, review of resource databases and inventories, and field assessments conducted for the Hill Campus East and Hill Campus West, and Housing Project #2 site. Field reconnaissance surveys were conducted on August 20, 2020, and November 10, 2020, focusing on potential development areas on the Campus Park and Housing Project #1 and #2 sites. The potential impacts of implementation of the proposed LRDP Update were then evaluated against this baseline in light of the adequacy of existing programs and proposed LRDP objectives intended to protect and enhance sensitive biological resources.

Biological resources data compiled for this analysis is included as Appendix E, Biological Resources Data, of this Draft EIR.

5.3.1 ENVIRONMENTAL SETTING

5.3.1.1 REGULATORY FRAMEWORK

In addition to the environmental protection provided by the California Environmental Quality Act (CEQA), other State, federal, UC Berkeley, and local regulations have been enacted to provide for the protection and management of sensitive biological and wetland resources. Information on regulations related to special-status species, sensitive natural communities, and wetlands regulated on the State and federal level is summarized below, followed by a summary of UC Berkeley and local plans and ordinances addressing sensitive biological resources.

Federal and State

On the federal level, the U.S. Fish and Wildlife Service (USFWS) is responsible for implementing the federal Endangered Species Act (ESA) and the Migratory Bird Treaty Act (MBTA), while the U.S. Army Corps of Engineers (USACE) has primary responsibility for protecting wetlands and regulated waters under Section 404 of the Clean Water Act. At the State level, the California Department of Fish and Wildlife (CDFW) is

¹ University of California, Berkeley, 2005, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, State Clearinghouse Number 2003082131.

responsible for administration of the California Endangered Species Act (CESA) and for protection of streams, water bodies, and riparian corridors through the Streambed Alteration Agreement process under Sections 1601 through 1606 of the California Fish and Game Code. Certification from the California Regional Water Quality Control Board (RWQCB) is also required when a proposed activity may result in discharge into navigable waters, pursuant to Section 401 of the Clean Water Act and United States Environmental Protection Agency (USEPA) 404(b)(1) Guidelines or affects State waters regulated under the Porter-Cologne Water Quality Control Act.

The ESA (16 United States Code [U.S.C.] 1531 4(f)) requires the USFWS to develop recovery plans to facilitate re-establishment and delisting of listed species. The USFWS has based recent recovery plans on natural communities and species assemblages rather than on any single listed species. The USFWS published the Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California, on April 7, 2003. Parts of the Draft Recovery Plan encompass portions of the Hill Campus East in the EIR Study Area. The Final Recovery Plan is not yet published.

Special-Status Species

Special-status species are plants and animals that are legally protected under the State and/or federal ESAs or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat. Species with legal protection under the ESAs often represent major constraints to development, particularly when the species are wide ranging or highly sensitive to habitat disturbance and where proposed development would result in a “take” of these species. Special-status species are species, subspecies, or varieties that fall into one or more of the following categories, regardless of their legal or protection status:

- Officially listed by California under the CESA or the federal government under the ESA as endangered, threatened, or rare;
- A candidate for State or federal listing as endangered, threatened, or rare under CESA or ESA;
- Taxa (i.e., taxonomic category or group) that meet the criteria for listing, even if not currently included on any list, as described in California Code of Regulations (CCR) Section 15380 of the CEQA Guidelines;
- Species identified by CDFW as Species of Special Concern (SSC);²
- Species listed as Fully Protected³ under the California Fish and Game Code;
- Species afforded protection under local planning documents; and
- Taxa considered by CDFW to be “rare, threatened, or endangered in California” and assigned a California Rare Plant Rank (CRPR) 1, 2, or 3 by the California Native Plant Society (CNPS) in its Inventory

² The term “California Species of Special Concern” is applied by CDFW to animals not listed under the CESA, but that are considered to be declining at a rate that could result in listing, or that historically occurred in low numbers and known threats to their persistence currently exist.

³ “Fully Protected” species may not be taken or possessed at any time and no take permits can be issued for these species except for scientific research purposes or for relocation to protect livestock.

of Rare and Endangered Plants of California. The CDFW system includes rarity and endangerment ranks for categorizing plant species of concern, and ranks 1, 2, and 3 are summarized as follows:

- CRPR 1A - Plants presumed to be extinct in California;
- CRPR 1B - Plants that are rare, threatened, or endangered in California and elsewhere;
- CRPR 2A - Plants presumed to be extinct in California but common elsewhere;
- CRPR 2B - Plants that are rare, threatened, or endangered in California but more common elsewhere; and
- CRPR 3 - Plants about which more information is needed (a review list).

The primary information source on the distribution of special-status species in California is the California Natural Diversity Database (CNDDB) program, which is maintained under the Biogeographic Data Branch of the CDFW. Occurrence data is obtained from a variety of scientific, academic, and professional organizations, public agencies, private consulting firms, and knowledgeable individuals, and then entered into the inventory. The presence of a population of species of concern in a particular region is an indication that an additional population may occur at another location within the region, if habitat conditions are suitable. However, the absence of an occurrence in a particular location does not necessarily mean that special-status species are absent from the area in question, only that no data has been entered into the CNDDB inventory. Where suitable habitat is present, detailed field surveys are generally required to provide a conclusive determination on presence or absence of sensitive resources from a particular location.

Nesting Birds and Protected Species

The USFWS is responsible for implementing the MBTA. The MBTA implements a series of treaties between the United States, Mexico, and Canada that provide for the international protection of migratory birds. Wording in the MBTA makes it clear that most actions that result in “taking” or possession (permanent or temporary) of a protected species can be a violation of the MBTA. The word “take” in this context is defined as meaning “pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.” The provisions of the MBTA are nearly absolute; “except as permitted by regulations” is the only exception. Examples of permitted actions that do not violate the law are the possession of a hunting license to pursue specific game birds, legitimate research activities, display in zoological gardens, bird-banding, and similar activities.

Under the California Fish and Game Code, the CDFW provides protection from “take” for a variety of species, including Fully Protected species. “Fully Protected” is a legal protective designation administered by the CDFW to conserve wildlife species that are at risk of extinction within California. Lists have been created for birds, mammals, fish, amphibians, and reptiles. The California Fish and Game Code sections dealing with Fully Protected species state that these animals “...may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected” species. However, taking may be authorized for necessary scientific research. Section 3503 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Subsection 3503.5 specifically prohibits the take, possession, or destruction of any birds in the orders Falconiformes (hawks and eagles) or Strigiformes (owls) and their nests.

Sensitive Natural Communities

In addition to species-oriented management, protecting habitat on an ecosystem-level is increasingly recognized as vital to the protection of natural diversity in the state. The CDFW maintains occurrence information in the CNDDDB inventory of those natural communities that are considered particularly rare or threatened. Although these natural communities have no legal protective status under the State or federal ESAs, they are provided some level of protection under the CEQA Guidelines. Sensitive natural communities are those native plant communities defined by CDFW as having limited distribution statewide or within a county or region and that are often vulnerable to environmental effects of projects. CDFW designates sensitive natural communities based on their State rarity and threat ranking using NatureServe's Heritage Methodology. Natural communities with rarity ranks of S1 to S3, where S1 is critically imperiled, S2 is imperiled, and S3 is vulnerable, are considered sensitive natural communities to be addressed in the environmental review processes of CEQA. Further loss of a sensitive natural community could be interpreted as substantially diminishing habitat, depending on the relative abundance, quality and degree of past disturbance, and the anticipated impacts to a known occurrence of a specific community type with a high inventory priority.

Wetlands

Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or groundwater, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions. Technical standards have been developed as a method of defining wetlands through consideration of three criteria: hydrology, soils, and vegetation.

The USACE, CDFW, and RWQCB have jurisdiction over modifications to stream channels, riverbanks, lakes, and other wetland features. Jurisdiction of the USACE is established through the provisions of Section 404 of the Clean Water Act, which prohibits the discharge of dredged or fill material into "waters" of the United States without a permit, including certain wetlands and unvegetated "other waters of the U.S." Jurisdictional authority of the CDFW is established under Sections 1601 through 1606 of the California Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. Jurisdictional authority of the RWQCB is established pursuant to Section 401 of the Clean Water Act, which typically requires a water quality certification when an individual or nationwide permit is issued by the USACE. The RWQCB also has jurisdiction over "waters of the State" under the Porter-Cologne Water Quality Control Act.

University of California

Strawberry Creek Management Plan

The Strawberry Creek Restoration Program began in 1987 in response to UC Berkeley and community concerns over the deteriorated environmental quality of Strawberry Creek. UC Berkeley's Office of Environment, Health & Safety (EH&S) sponsored a comprehensive study of the creek with the results of the

study, completed by Robert Charbonneau, published in December 1987 as the Strawberry Creek Management Plan (SCMP).

The SCMP was originally a water quality management plan but ultimately expanded into a comprehensive study of the watershed with a focus on overall urban creek and riparian habitat preservation and restoration. The SCMP provides recommendations for implementation of management strategies for point and non-point source pollution control, channel stabilization, aquatic and riparian habitat restoration, and watershed management. An advisory committee, the Strawberry Creek Environmental Quality Committee (SCEQC), consisting of faculty, staff from UC Berkeley planning and operations departments, and students, was created to help direct restoration activities, including erosion control and bank stabilization, sanitary engineering and point source investigations, public outreach, and other activities.

Implementation of the SCMP from 1987 through the present has successfully led to substantially improved overall water quality conditions, enhanced ecological integrity as measured by biological criteria (macroinvertebrates and fish), increased environmental education for students and the public, and stabilization of the most critical erosion sites within the UC Berkeley campus. While the SCMP specifically excludes other creeks through UC Berkeley property (i.e., Derby and Claremont), it has been developed cooperatively with input from faculty, EH&S staff, a fire management planner, an environmental planner, and a grounds maintenance supervisor to provide holistic and comprehensive approaches to creek and watershed management. All projects that implement the LRDP Update would be informed by the SCMP integrated policy and management tools to protect resources and beneficial uses.

Campus Landscape Master Plan and Landscape Heritage Plan

The UC Berkeley Landscape Master Plan⁴ is a comprehensive long-range plan that provides a broad vision for stewardship and enhancement of the natural areas and open spaces of the Campus Park. The Landscape Master Plan supplements the policies and guidelines of the LRDP with more specific guidance for the treatment of, and investment in, the Campus Park landscape.

The Landscape Master Plan vision is presented in a series of landscape initiatives, which focus on selected sites based on historical importance, resource preservation, areas of intensive use, and the potential to create places of interaction for the UC Berkeley community. Goals and policies in the Landscape Master Plan address six objectives that apply to UC Berkeley: Educational Mission, Campus Image, Historic Continuity, Stewardship, Landscape Character, and Community. The Landscape Master Plan also identifies a range of initiatives, based on specific physical and geographical areas of the Campus Park, including Natural Areas, Glades, Classical Core, Areas of Interaction, Campus Greens, and Edges and Gateways.

The Landscape Heritage Plan⁵ provides a framework for UC Berkeley in preserving its cultural and historical landscape. The specific purpose of the Landscape Heritage Plan is to identify a strategy for restoring the cultural landscape of the Campus Park's historic core and to ensure its continued enhancement. The

⁴ UC Berkeley, 2003, Final Draft Landscape Master Plan.

⁵ UC Berkeley, Landscape Heritage Plan, June 2004.

Landscape Heritage Plan presents the history of the Campus Park and provides a framework and guidance to ensure a successful balance between historic preservation and the need to accommodate improvements of an educational institution.

Campus Specimen Tree Program

UC Berkeley has an existing program that it uses to evaluate specimen trees. Other plants (shrubs, groundcover, or grasses) that meet the criteria may also be considered as specimen flora. The program is implemented as part of a CBP under the 2020 LRDP EIR certified in 2005. The Office of Physical & Environmental Planning implements the program and makes the determination of status using five criteria during the project development process. To be considered a specimen tree, the tree or plant should be in good health and not pose a hazard to pedestrian and automotive traffic, existing buildings, or utilities, and should have one or more of the following qualities:

- **Aesthetics:** The tree is an integral part of an architectural theme or plays an important role in framing or screening a building or other feature.
- **Historical:** The tree was planted as part of a memorial planting or is a particularly outstanding example of the original botanical garden plantings.
- **Educational:** The tree represents a special taxonomic or morphological feature, is unique to the campus or the San Francisco Bay area, is a particularly outstanding example of California flora, is part of an experimental planting with a special landscape or agricultural value, or is regularly used by campus instructors as an example of the species.
- **Strawberry Creek:** The tree provides shade and other benefits to aquatic habitat health, and removal of the tree would significantly increase erosion potential or affect the stability of a portion of the creek as a riparian corridor.
- **Natural Area:** The tree is located within either the Wickson, Grinnell, or Goodspeed Natural Areas.

Under this program, the retention of existing specimen trees, shrubs, and grass areas is a priority in the final design of proposed projects. Site preparation is conducted to minimize removal and/or damage of specimen trees or plant species to the full extent feasible. Sensitive construction practices are used to avoid possible damage to trees to be retained, including construction setbacks, installation of temporary construction fencing around individual trees to be preserved, and monitoring by a certified arborist if any required limb removal or disturbance would occur within the dripline of trees to be retained. Grading, vegetation removal, and replacement plans, where necessary, are coordinated with Capital Projects and/or Office of Physical & Environmental Planning. Specimen trees impacts are addressed by successful transplanting or through replacement by new plantings in-kind or from other more horticulturally appropriate species previously reported from the campus. Landscaped areas are restored to the full extent feasible.

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design

Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing UC Berkeley buildings, infrastructure, grounds, and maintenance issues. Relevant sections of the Design Standards are as follows:

- Standards for temporary erosion and sediment control practices list applicable codes, including the federal Clean Water Act Section 208, Resource Conservation Act, Water Code, and San Francisco Bay Basin (Region 2) Water Quality Control Plan policies. Standards for construction near creeks and wetlands and other sensitive areas list additional applicable codes.
- Physical alteration of creek channels shall be avoided unless there is no practical alternative.
- Diversion, realignment, or other alteration of the natural path of creek channels is prohibited.
- Excavation or filling or other disturbance of streambeds, stream banks, or wetlands during construction is prohibited. Encroachment upon creek-side areas or wetlands shall be avoided.
- Excavation or filling or other disturbance of streambeds, stream banks, or wetlands during construction is prohibited.
- Siltation or sedimentation of creek channels or wetlands as a result of site runoff or grading is prohibited.
- An undisturbed buffer zone shall be maintained between buildings or structures and creek or wetland areas per the UC Berkeley Landscape Master Plan. Vegetation disturbance or alteration shall be avoided in these natural areas.
- An undisturbed buffer zone of at least one hundred feet (100'-0") in width, centered on the stream course shall be maintained between construction site activities and creek or wetland areas. Storage or staging areas for equipment, building materials, chemicals, etc., shall be located as far away as is practical from creek or wetland areas and be stored in covered secondary containment. Unnecessary vegetation disturbance is prohibited.
- Development shall not be detrimental to known endangered plant or animal species or their critical habitats or migration routes. In general, wildlife habitat shall be preserved and enhanced to the extent possible.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to biological resources as part of the project approval process. As part of the proposed LRPD Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.5.3, Impact Discussion.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential

future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the Cities of Berkeley and Oakland related to biological resources that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

City of Berkeley

Berkeley General Plan

The City of Berkeley General Plan contains general references to the protection of sensitive biological resources. The Environmental Management (EM) Element Policy EM-28 calls for the protection and restoration of valuable, significant, or unique natural habitat areas. Actions called for in Policy EM-28 include balancing the increased use of open space and public lands with enhancement of natural habitat, and the importance of preserving and enhancing riparian areas and water flows necessary to support natural habitat and wildlife. Policy EM-32 calls for interjurisdictional coordination to restore historic coastal grasslands and native trees in the hill area to provide natural habitat and reduce the fire danger. Policy EM-27 on creeks and watershed management, seeks daylighting whenever feasible, and promotes restrictions on development adjacent to creeks, and encourages creek and wetland restoration projects. Policy EM-29 promotes the preservation of street and park trees, including preservation of heritage trees, including native oaks and other significant trees on public and private property.

City of Berkeley Ordinances

The City of Berkeley's Coast Live Oak Tree Removal Ordinance (No. 6462-N.S.) prohibits the removal of any coast live oak tree with a circumference of 18 inches or more, and any multi-stemmed coast live oak with an aggregate circumference of 26 inches without a permit. Removal of any protected live oak is strongly discouraged by the City, and requires mitigation when removal is permitted.

The City's Preservation and Restoration of Natural Watercourses Ordinance (No. 5961) regulates any future culverting of, or construction in, open creeks, encourages the rehabilitation and restoration of natural waterways, and promotes responsible management of watersheds. The ordinance includes provisions that prohibit obstructing or interfering with watercourses, require setbacks for new construction, and describe the process for obtaining permits for construction of walls, drains, and bulkheads.

City of Oakland

Oakland General Plan

The City of Oakland's General Plan contains policies related to the protection of biological resources. These policies from the Open Space, Conservation, and Preservation Element include protection of native plant communities, especially oak woodlands, redwood forests, native perennial grasslands, and riparian

woodlands; protection of habitat for rare, endangered, and threatened species; and protection of wildlife from the hazards of urbanization, loss of habitat, and predation by domestic animals.

City of Oakland Ordinances

Like the City of Berkeley, the City of Oakland has both a tree protection and a creek protection ordinance. The Protected Tree Ordinance (Title 12, Chapter 12.36) defines protected trees and requires a permit for their removal. According to the ordinance, a tree removal permit must be obtained to remove the following trees: Coast live oaks measuring 4 inches in diameter at breast height (dbh) or greater; any other tree measuring 9 inches dbh or greater, except eucalyptus and Monterey pine trees; and more than five Monterey pine trees measuring at least 9 inches dbh, per acre. The removal of five or fewer Monterey pines per acre is not regulated by the Oakland tree protection ordinance.

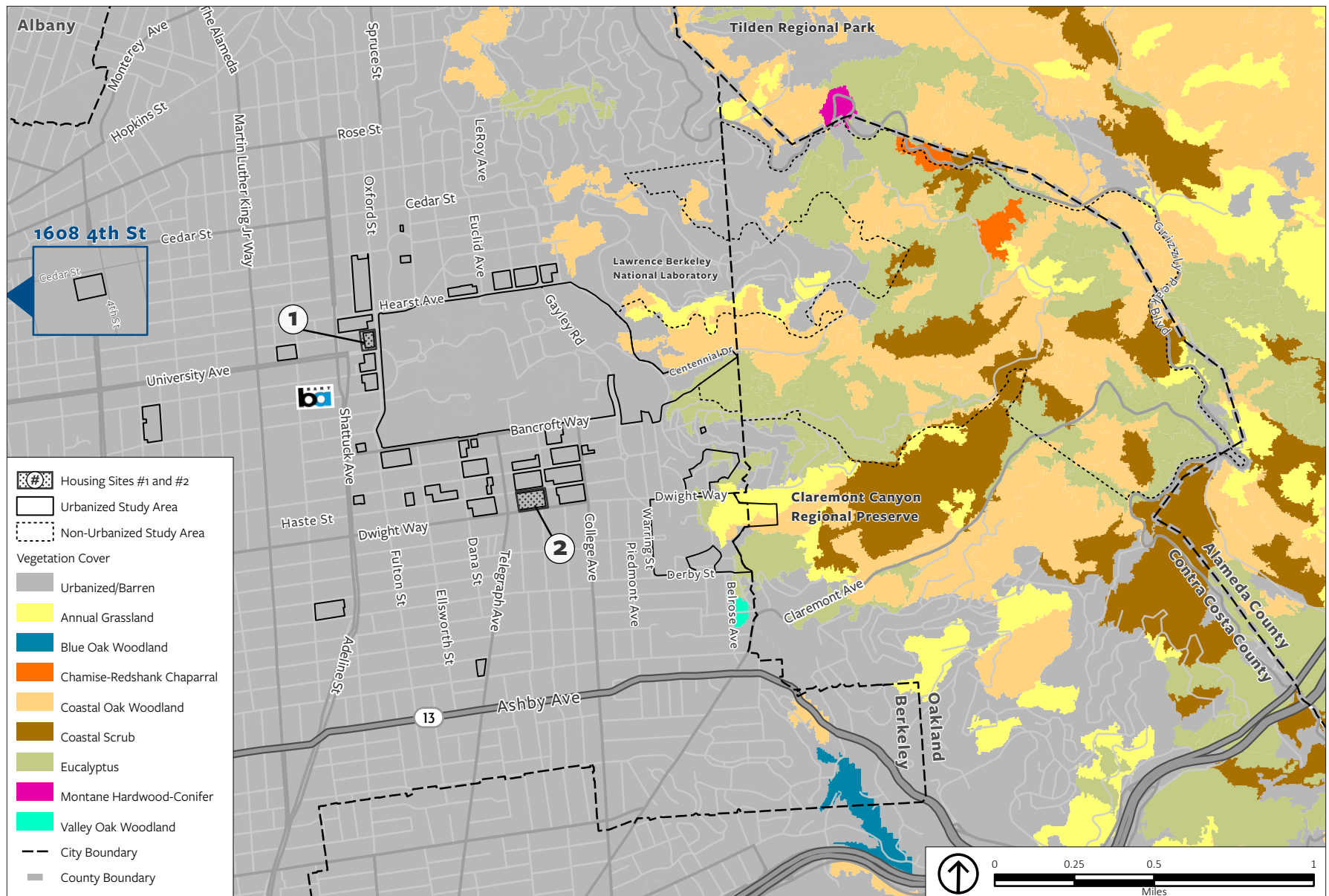
The City of Oakland's Creek Protection, Storm Water Management, and Discharge Control Ordinance (Title 13, Chapter 13.16) serves to regulate proposed modification in or within 100 feet of a creek. The category of the permit is dependent on proximity to the creek channel and nature of the exterior work. A creek protection plan is generally required in addition to an approved permit.

5.3.1.2 EXISTING CONDITIONS

LRDP Update

The UC Berkeley campus is located on the western slopes of the Berkeley Hills, comprising the upper watersheds of Strawberry and Claremont Canyons. The Campus Park and the Hill Campus West are largely developed, and the Hill Campus East is largely undeveloped. The lands to the south, north, and west of the Campus Park are extensively developed with urban uses, including residential, commercial, and institutional uses. Sensitive vegetation and wildlife resources are generally absent in the urbanized area surrounding the Campus Park due to the extent of past development and lack of suitable habitat. The eastern edge of the Southside area, along the upper slopes of the Clark Kerr Campus and the Smyth-Fernwald site, contain areas of undeveloped habitat, including areas of native woodlands and grasslands, and remnants of riparian habitat along the remaining segments of open creek channels.

Figure 5.3-1, Vegetative Cover, shows the vegetative cover in the vicinity of the EIR Study Area based on mapping prepared by the USFWS as part of the CALVEG mapping program, showing the extent of urbanization associated with the Campus Park and the Hill Campus West, and the natural cover of grasslands, eucalyptus and other planted tree stands, native oak woodland, and coastal scrub in the Hill Campus East. An estimated 400 acres of the EIR Study Area is urbanized with existing development, structures, roadways, and ornamental landscaping. This includes the Campus Park, most of the Clark Kerr Campus, and other City Environs Properties. Natural cover in the Hill Campus West and the Hill Campus East and upper elevations of the Clark Kerr Campus and the Smyth-Fernwald property consist of an estimated 315 acres of eucalyptus and conifer stands, 256 acres of oak woodland, 85 acres of coastal scrub, 28 acres of grassland, and 12 acres of chaparral. Information on vegetative cover and wildlife habitat, potential for special-status species and sensitive natural communities, and presence of wetlands associated with the UC Berkeley campus and the Housing Projects #1 and #2 sites is summarized herein.



Source: Alameda County, 2019; CALVEG, 2015; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Note: Urbanized/Barren Vegetative Cover includes parks and other urban vegetation like landscaping.

Figure 5.3-1
Vegetative Cover

Campus Park

The Campus Park is an urbanized and landscaped area that contains the majority of UC Berkeley's academic and administrative space. The North and South Forks of Strawberry Creek and three natural areas bordering them are the most biologically important features on the Campus Park. Mature ornamental trees, shrubs, and large areas of turf contribute to the landscape of the Campus Park.

Vegetation

The Campus Park is dominated by ornamental and native landscape plantings (such as coast live oak, coast redwood, California buckeye, and California bay), which surround the existing buildings, plazas, and open areas of lawns and groundcovers. The riparian areas associated with Strawberry Creek are the most biologically productive and sensitive vegetated areas on the Campus Park.

Remnants of native oak woodlands, dominated by large native coast live oaks, occur on the Campus Park on the slopes around Observatory Hill between Haviland and McCone Halls. Many of the coast live oak trees are of a substantial size, with trunk diameters exceeding 24 inches dbh, which contributes to the natural character of Observatory Hill. The remainder of the Campus Park supports a variety of primarily non-native ornamental plantings, including mature eucalyptus, pines, palms, cedars, ginkgoes, maples, and oaks. Tree and shrub species from around the world have been planted throughout the Campus Park for aesthetic, teaching, and research purposes. In the late 1880s, a botanical garden was established north of Doe Library between the Hearst Mining Circle and Haviland Hall, and a few of the specimen trees from the original botanical garden remain. Another distinct vegetation resource on the Campus Park is the grove of large blue gum eucalyptus to the west of Weill Hall. Many of the tree, shrub, and groundcover species on the Campus Park are non-native, invasive species that have spread and present a management challenge, including several acacia species, pittosporum, French broom, euphorbia, and ivy, among others.

The riparian corridors along Strawberry Creek are the focus of the remaining open space in the Campus Park. The South Fork is an open channel from just northeast of the Women's Faculty Club to Oxford Street. The North Fork enters an open channel west of the North Gate, flows through a culvert under the West Circle, and continues as an open channel through the eucalyptus grove west of Weill Hall, where it meets the South Fork. Remnants of natural vegetation as well as planted native and ornamental species grow along both forks across the Campus Park. Native species along the open reaches of the Strawberry Creek corridors include buckeye, live oak, bay, big-leaf maple, snowberry, hazel, and sword fern. Non-native trees and shrubs include, among others, blue gum, red gum, American elm, weeping elm, bald cypress, pittosporum, giant sequoia, azaleas, rhododendrons, cotoneaster, and purple-leaved flowering plum. UC Berkeley has focused removal of invasive species along the creek over the years and while reduced today, several highly invasive non-native groundcovers, including periwinkle and German ivy, grow in and along the banks of the creek and surrounding landscaped areas. Redwoods form the dominant tree cover along several segments of the creek. This species is native to coastal California and parts of the Oakland Hills but is not indigenous to the Campus Park and the Strawberry Creek watershed.

Three designated Natural Areas, established by UC Berkeley in 1967, occur along the two forks of Strawberry Creek on the Campus Park. The Natural Areas, referred to as the Wickson, Grinnell, and

Goodspeed Natural Areas, were designated for a combination of biological, educational, and aesthetic values that set them apart from the remainder of the Campus Park. The remnant natural vegetation and mature planted species associated with the Natural Areas contribute to higher vegetation and wildlife habitat values than the remainder of the more intensively developed Campus Park.

- **Wickson Natural Area.** This Natural Area occurs along the North Fork of Strawberry Creek from the North Gate to Wickson Road. Dominant tree species along this segment of the creek include redwood, buckeye, live oak, dogwood, maple, and bay. Shrub and groundcover species include scouring rush, nettle, bracken fern, inch plant, pittosporum, and German ivy. This Natural Area is bordered by the managed grounds east of University House, the remnant oak woodlands on the northwestern slope of Observatory Hill, and the lawns that border the Agricultural Complex, Haviland Hall, and Moffitt Library. A large palm and other older ornamental trees associated with the original botanical gardens extend into the southeastern edge of the Wickson Natural Area.
- **Grinnell Natural Area.** This Natural Area borders the lower end of the North Fork of Strawberry Creek and the South Fork of Strawberry Creek from the Dana Street Bridge to the Oxford Street storm drain. Dominant tree species include the large grove of blue gum just west of Weill Hall, redwoods along the South Fork, and scattered live oak along the fringe of the creek corridor. Understory growth beneath the eucalyptus is sparse due to the dense duff produced by the trees, compaction, dense shade, and other factors. Other tree and shrub species found in the remainder of the Natural Area include toyon, nine-bark, thimbleberry, hazel, blue elderberry, maple, bay, and buckeye.
- **Goodspeed Natural Area.** This Natural Area occurs on the South Fork from the Faculty Club, across the north edge of Faculty Glade, to the Social Sciences Building. Trees along the creek include bay, buckeye, live oak, and planted redwoods and pines. Mature live oak and a specimen buckeye are significant edge features that surround the broad turf area of the glade. Native shrubs and groundcovers along this segment of the creek include hazel, toyon, California blackberry, and thimbleberry, together with introduced German ivy and inch plant. A number of wetland species occur in and along the creek channel, including sedge, horsetail, and water parsley.

Wildlife

The Campus Park and surrounding urban lands in the city of Berkeley have only limited value to wildlife due to the extent of existing development and intensity of human activity. Impervious surfaces and structures provide little opportunity for use by wildlife, and species found in the vicinity are typical in urbanized areas. In addition to its aesthetic value, mature landscaping, particularly larger trees and shrubs, can provide nesting and foraging opportunities for both resident and migratory bird species.

The diversity of animal life on the Campus Park has consistently diminished with the increased urbanization in the city of Berkeley and the UC Berkeley campus. Birds are most abundant, both in numbers and diversity of species. Segments of the creek corridors and remaining undeveloped natural areas with shrub and tree canopy support both resident and migratory birds, including Steller and scrub jays, dark-eyed junco, brown towhee, red-breasted nuthatch, black phoebes, black-capped chickadee, brown creeper, and sparrows. Bird species common in urban and suburban habitats use the structures, lawns, and landscaped areas on the Campus Park, and include American robin, house finch, house sparrow, mourning dove, northern mockingbird, and European starling, among others.

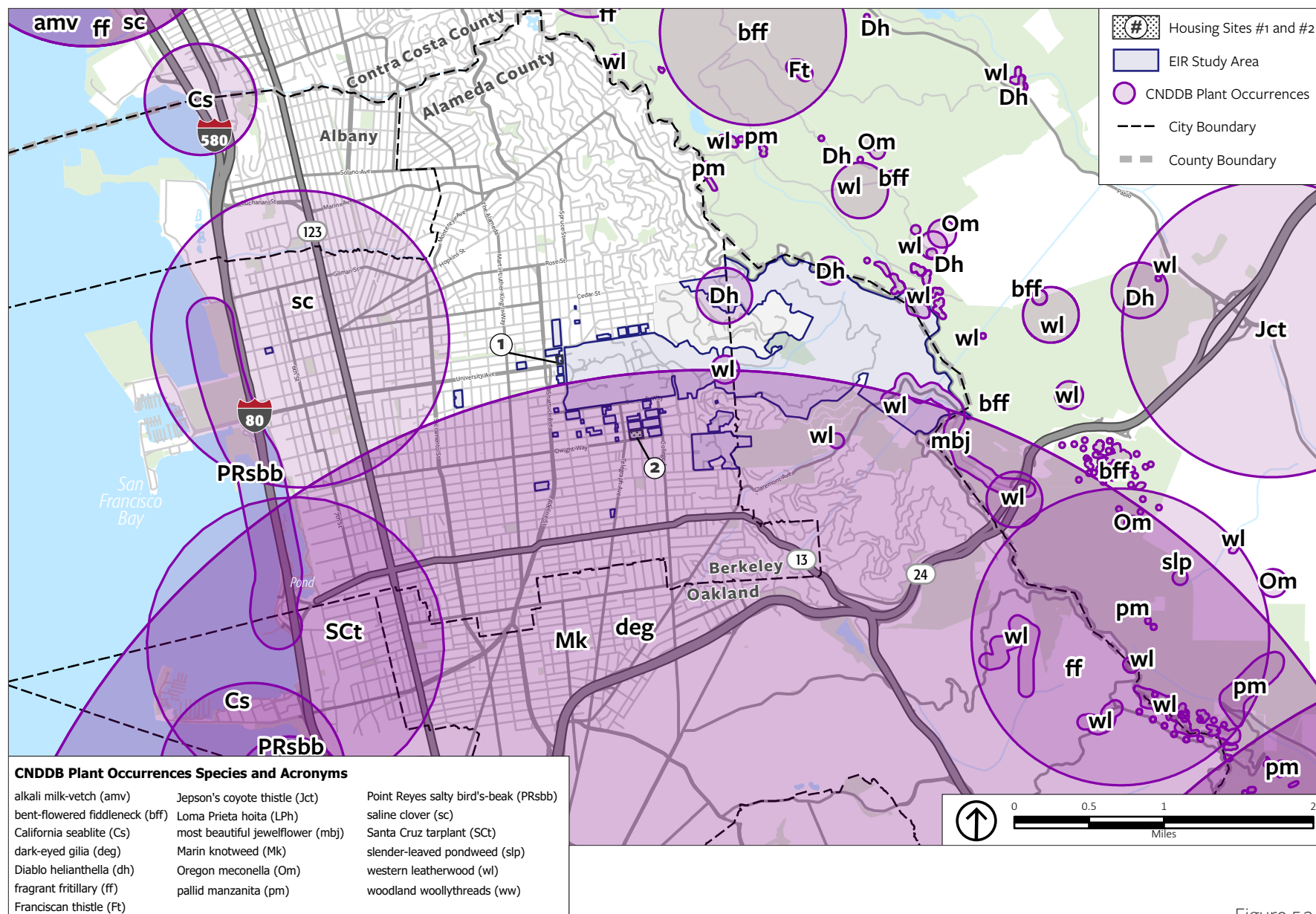
Intensively managed turf and landscaped areas tend to have little biological value, other than occasional foraging opportunities to some bird species and habitat for Botta's pocket gopher. Introduced fox squirrel, house mouse, and Norway rat are abundant along the creek corridors, areas with protective cover, and sometimes within structures. Nocturnal scavengers, such as raccoon and opossum, also frequent the creek corridors and locations where food waste is available for foraging. Great horned owl has been known to roost in the eucalyptus grove west of the Weill Hall and peregrine falcon have successfully nested on top of Sather Tower since 2017. Other raptor species, such as red-shouldered hawk, could establish nests in the larger trees in the undeveloped natural areas on the Campus Park.

The aquatic habitat value of Strawberry Creek through the Campus Park is limited by the extensive historical physical alterations to the creek channels, the lack of pool habitat, increased water velocities, and water quality degradation. The number and diversity of invertebrate and macroinvertebrate species in both forks of the creek on the Campus Park is low, indicative of stressed conditions and pollutants. Common species include aquatic earthworms, stonefly, narrow-winged damselfly, and water strider. Implementation of the SCMP, beginning in 1987, led to habitat conditions improving from very poor to fair on the South Fork of Strawberry Creek. North Fork habitat conditions have also improved but remain poor, probably due to continued water pollution from the more urbanized North Fork watershed. Steelhead were once reported by the CDFW from Strawberry Creek in the 1930s, but the native fisheries were eliminated from the creek segments across the Campus Park as a result of the changing conditions in creek hydraulics and water quality, culverting, and construction of barriers to fish migration. Native minnow species, California roach and hitch, Sacramento suckers, and three-spined sticklebacks were stocked in the creek beginning in 1988 and have been observed in subsequent monitoring studies.

Special-Status Species

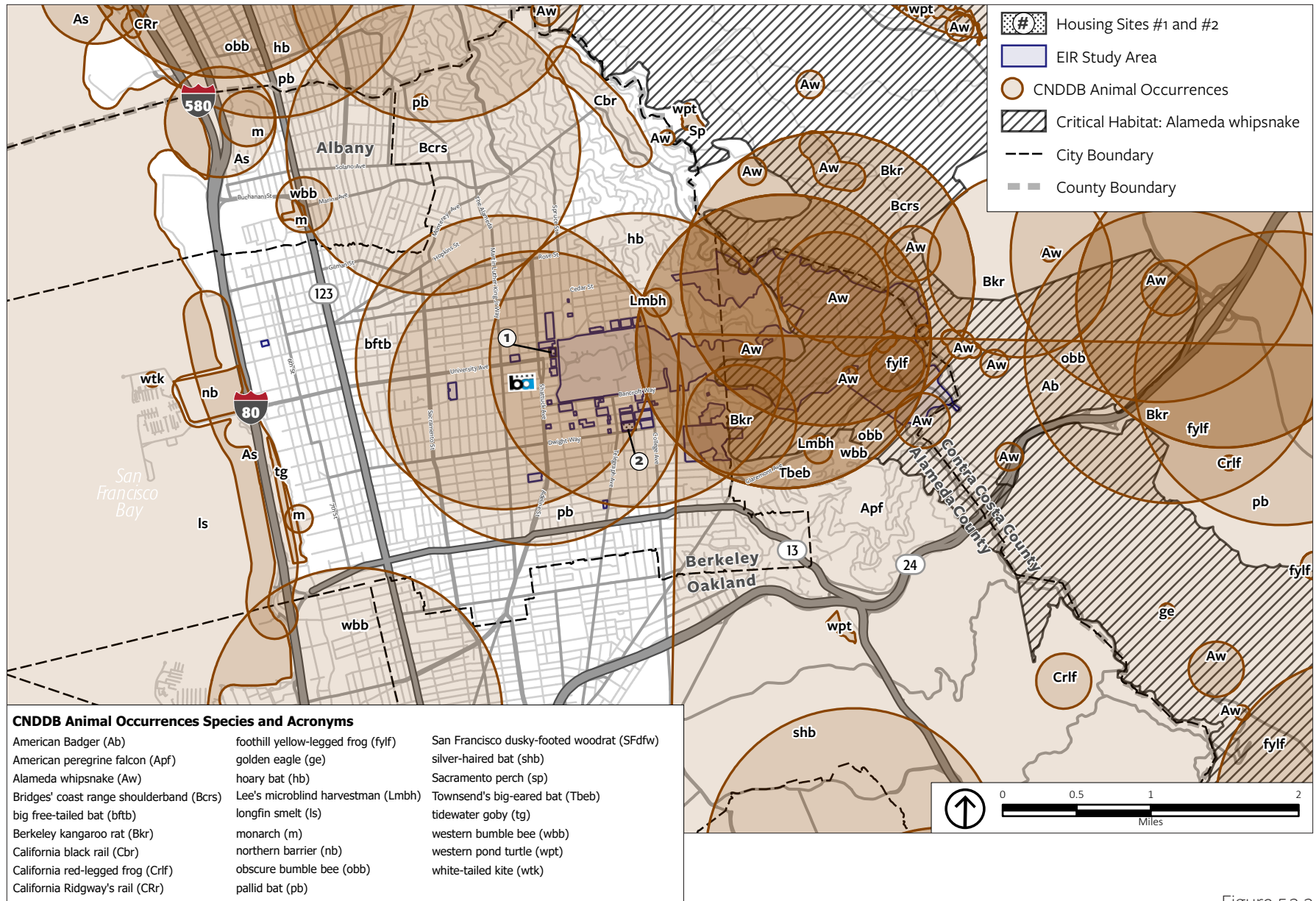
Records maintained by the CNDDDB indicate that a number of special-status species have been reported from the Berkeley and Oakland areas. Figure 5.3-2, Special-Status Plant Species, and Figure 5.3-3, Special-Status Animal Species and Critical Habitat, show the known occurrences of special-status plant and animal species reported by the CNDDDB within several miles of the EIR Study Area. These consist of 19 special-status plant species and 26 special-status animal species.

The CNDDDB records were considered along with the CNPS Inventory of Rare and Endangered Plants, data from the CDFW and USFWS, and other information sources in considering the potential for occurrence of special-status species in the vicinity of the EIR Study Area. These were compiled into tables with species name, status, typical habitat characteristics, and their potential for occurrence in the EIR Study Area (see Appendix E, Biological Resources Data). Table E-1, Special-Status Plant Species Known or Suspected to Occur in Berkeley Hills Vicinity and Potential for Occurrence in EIR Study Area, provides information on 54 special-status plant species and Table E-2, Special-Status Wildlife Species Known to Occur in Berkeley Hills Vicinity and Potential for Occurrence in EIR Study Area, provides information on the 51 special-status animal species evaluated under this review. Of these, a total of 22 special-status plants and 16 special-status animal species were assumed to be present in or considered to have some potential for presence in the EIR Study Area, generally within the Hill Campus East.



Source: Alameda County, 2019; California Natural Diversity Database (CNDB), 2020; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Figure 5.3-2
Special-Status Plant Species



Source: Alameda County, 2019; California Natural Diversity Database (CNDDDB), 2020; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Figure 5.3-3
Special-Status Animal Species and Critical Habitat

As indicated in Figure 5.3-2, Special-Status Plant Species, two special-status plant species, western leatherwood (*Dirca occidentalis*) and Diablo helianthella (*Helianthella castanea*), have been reported from the Strawberry Canyon and Claremont Canyon watersheds of the Hill Campus East. Of the 16 special-status animal species, Alameda whipsnake (*Masticophis lateralis euryanthus*) and San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), are known to occur within the Hill Campus East, and a pair of peregrine falcons (*Falco peregrinus anatum*) are known to nest on top of Sather Tower in the Campus Park. The other 33 special-status species have varying potential for possible presence in the EIR Study Area, as indicated in Tables E-1 and E-2.

Due to the extent of past development, the Campus Park does not provide suitable habitat for special-status plant or animal species, except for nesting by raptors such as the peregrine falcon pair and possibly roosting by several species of bats. There is a possibility that mature trees on the Campus Park, such as those in the eucalyptus grove of Weill Hall and trees in the other natural areas, could be used for nesting by great horned owl, red-shouldered hawk, or other raptor species in the future. Any established raptor or migratory bird nest in active use would be protected from destruction under the MBTA and Section 3503.5 of the California Fish and Game Code.

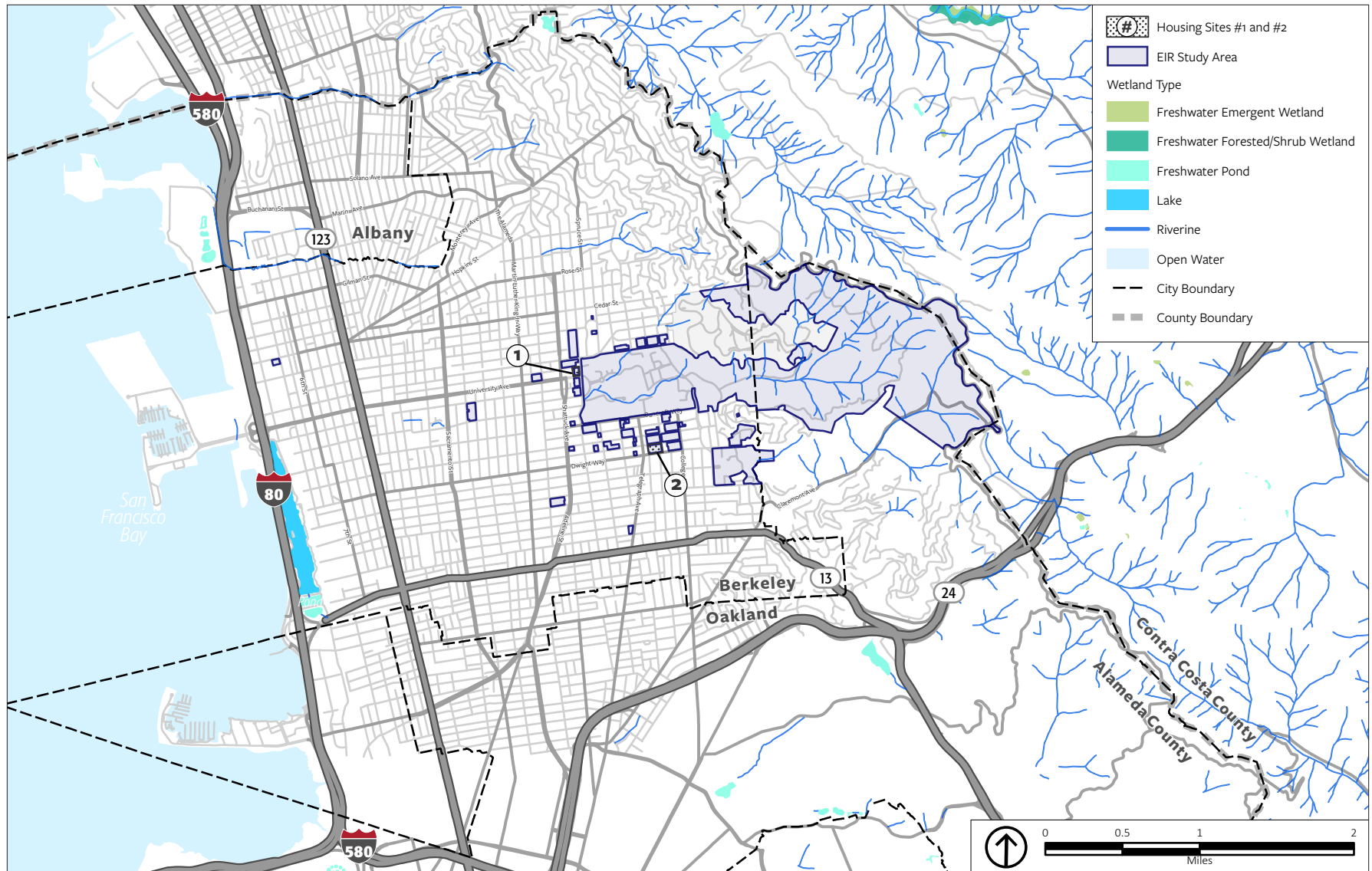
There is a remote possibility that one or more species of special-status bat could use mature trees with cavities and exfoliating bark, or attics and other locations in buildings on the Campus Park that are largely inaccessible to humans and remain relatively undisturbed. These include pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western mastiff bat (*Eumops protis californicus*), and western red bat (*Lasiurus blossevillii*). The intensity of human activity on the Campus Park limits the likelihood that roosts of any special-status bat species are present, and none have been reported by the CNDDDB in the vicinity. Table E-2 in Appendix E provides information on each of these species of bat and their recognition by CDFW as an SSC.

Sensitive Natural Communities

Sensitive natural community types are generally absent on the Campus Park. Native riparian cover occurs along some reaches of Strawberry Creek and remaining stands of native oak woodlands on Observatory Hill and other locations, but these are generally not recognized by CDFW as sensitive natural community types. Small areas of freshwater marsh vegetation growing along segments of Strawberry Creek would be protected as regulated waters.

Wetlands

Jurisdictional wetlands and unvegetated other waters on the Campus Park are limited to the North and South Forks of Strawberry Creek (see Figure 5.3-4, National Wetlands Inventory Map). Most of these creek segments lack emergent wetland vegetation, although some wetland indicator species occur in the channel bottom along some reaches. Modifications at or below the ordinary high water along the creeks is regulated by the USACE, and any alternation to the bed or banks of the channels requires authorization from the CDFW and RWQCB. No seeps, springs, or seasonal wetlands occur within the remainder of the Campus Park.



Source: Alameda County, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019; USFWS National Wetlands Inventory, 2019.

Figure 5.3-4
National Wetlands Inventory Map

Hill Campus East and Hill Campus West

The Hill Campus East and the Hill Campus West are bordered by Lawrence Berkeley National Laboratory, the East Bay Regional Park District's (EBRPD) Tilden Regional Park and Claremont Canyon Regional Preserve, East Bay Municipal Utility District (EBMUD) watershed lands, and low-density residential development. The Hill Campus West consists of the relatively developed hillside area east of Gayley Road encompassing the Greek Theatre, Stern Hall and Foothill Student Housing, Bowles Hall, the Memorial Stadium, and the Strawberry Canyon Recreation Area. The Hill Campus East encompasses the remaining largely undeveloped lands in the Strawberry Creek and upper Claremont Creek watersheds.

General Vegetation and Wildlife

As shown on Figure 5.3-1, Vegetative Cover, the Hill Campus East and the Hill Campus West consist of the largely undeveloped upper watersheds of Strawberry and Claremont Canyons, supporting a diverse mixture of cover types and associated wildlife species. Ornamental landscaping surrounds the developed areas of the Greek Theatre, student housing, Memorial Stadium, the UC Botanical Garden, and around the Lawrence Hall of Science and Strawberry Canyon Recreation Area, including a wide variety of native and non-native trees, shrubs, groundcovers, and turf. Large tracts of the Hill Campus East were planted with eucalyptus and conifer, which now form a dominant part of the landscape. Stands of blue gum have spread throughout much of the two watersheds and have contributed to relatively high fire fuel loads. The Wildland Vegetative Fuel Management Plan for the Hill Campus East provides a management program for addressing fire risks and fuel reduction methods. Resources associated with the Hill Campus East were thoroughly documented and potential impacts assessed as part of the Draft EIR on the Wildland Vegetative Fuel Management Plan.⁶

Native cover in the Hill Campus East includes areas of oak-bay woodland, north coastal scrub, remnants of oak savanna and native grasslands, and the important riparian scrub and woodland associated with the main channel and tributaries of Strawberry and Claremont Creeks. The 1987 SCMP describes a program for improvements to Strawberry Creek, some of which have been implemented.

Several factors contribute to the relatively high wildlife habitat values of the Hill Campus East as a whole. These include the extent of undeveloped land both on the Hill Campus East and the adjacent EBRPD parklands and EBMUD watershed lands, limited human access and activity, the varied vegetation cover types, and available surface water. The riparian corridors and adjacent oak-bay woodlands, scrub, and remnant grasslands are particularly valuable to wildlife, supporting a diverse array of amphibians, birds, and small mammals. This includes suitable habitat for the State and federally threatened Alameda whipsnake, San Francisco dusky-footed woodrat, an SSC, several special-status plant species, and numerous bird species of concern. The mosaic of native habitat provides important foraging opportunities for a number of mammalian and avian predatory species, including mountain lion, bobcat, grey fox, coyote, striped and spotted skunk, great horned owl, red-tailed hawk, and other raptors.

⁶ UC Berkeley Hill Campus, Wildlife Vegetative Fuel Management Plan, 2021, State Clearinghouse No 2019110389, prepared for University of California, Berkeley, Capital Strategies – Physical & Environmental Planning. The WVFMP and EIR were approved and certified on February 10, 2021.

In contrast, wildlife habitat values are relatively low in the vicinity of existing development in the Hill Campus East, supporting species typical of urban and suburban habitat. This is especially true where these areas are intensively managed, such as the recreation fields within the Strawberry Canyon Recreation Area, the parking lots and landscaped areas surrounding the Lawrence Hall of Science, and portions of the Botanical Garden. Mature trees, including blue gum and conifers, do provide suitable nesting substrate for a number of bird species, particularly raptors such as red-tailed hawk and great horned owl. The spread of non-native species from planted woodlots and road margins, particularly the highly invasive blue gum and French broom, degrade the remaining natural habitats in the Hill Campus East by out-competing and eventually replacing native vegetation.

Special-Status Species

Based on the occurrence records of the CNDDDB and other information sources, a number of special-status plant and animal species are known or suspected to occur in the Hill Campus East. Tables E-1, Special-Status Plant Species Known or Suspected to Occur in Berkeley Hills Vicinity and Potential for Occurrence in EIR Study Area, and E-2, Special-Status Wildlife Species Known to Occur in Berkeley Hills Vicinity and Potential for Occurrence in EIR Study Area (see Appendix E, Biological Resources Data), list the more than 38 special-status species that have been reported within or are considered to have the highest potential for occurrence in the Hill Campus East. These tables include information on their status, preferred habitat conditions, and likelihood of occurrence. Most of these species, including California red-legged frog (*Rana draytonii*), western pond turtle (*Actinemys marmorata*), American badger (*Taxidea taxus*), bent-flowered fiddleneck (*Amsinckia lunaris*), pallid manzanita (*Arctostaphylos pallida*), and Diablo helianthella, have been reported from the vicinity of the EIR Study Area or in historic records, but have not been found within the EIR Study Area in recent decades. Detailed surveys and habitat assessments conducted as part of the CEQA review on the Wildland Vegetative Fuel Management Plan⁷ did not confirm presence of any of these special-status species in the Hill Campus East with the exception of San Francisco dusky-footed woodrat and additional occurrences of western leatherwood. The following provides information on the four special-status species known from the Hill Campus East: Alameda whipsnake, San Francisco dusky-footed woodrat, western leatherwood, and Diablo helianthella.

- **Alameda whipsnake.** Perhaps the species of greatest concern in the Hill Campus East is the State and federally threatened Alameda whipsnake. As indicated in Figure 5.3-3, Special-Status Animal Species and Critical Habitat, much of the Hill Campus East has been designated as critical habitat for this species by the USFWS. Alameda whipsnake is a slender, fast-moving diurnal snake found exclusively in the inner coast ranges of western and central Alameda and Contra Costa Counties. The Alameda whipsnake is found in chaparral, Diablan sage scrub, and northern coyote brush scrub, as well as adjacent riparian scrub, grasslands, and woodlands. Typical habitat characteristics include open to partially open scrub/chaparral cover on east, southeast, and southwest-facing slopes with abundant rock outcrops, rodent burrows, and western fence lizard prey.

⁷ University of California, Berkeley, 2021, UC Berkeley Hill Campus, Wildlife Vegetative Fuel Management Plan, State Clearinghouse No 2019110389, prepared for University of California, Berkeley, Capital Strategies – Physical & Environmental Planning. The WVFMP and EIR were approved and certified on February 10, 2021.

Existing development has fragmented habitat for Alameda whipsnake into what are considered separate populations, identified by the USFWS as the Tilden-Briones, Oakland-Las Trampas, Hayward-Pleasanton Ridge, Mount Diablo-Black Hills, and the Sunol-Cedar Mountain populations. In 2006, the USFWS designated “critical habitat” units that encompass portions of each of these five populations, with designated critical habitat for Alameda whipsnake extending over a large part of the Hill Campus East (see Figure 5.3-3).

- **San Francisco dusky-footed woodrat.** San Francisco dusky-footed woodrat is considered a California SSC by the CDFW. It is a year-round resident in the San Francisco Bay area, preferring scrub and wooded areas, and feeds primarily on nuts, fruits, fungi, foliage, and forms. It builds large terrestrial stick nests that range from 2 to 5 feet in height and can be up to 8 feet in basal diameter. The nests are typically placed on the ground or against a log or tree and can be in tree canopies, and are often within dense brush. Surveys conducted as part of the environmental review for the Wildland Vegetative Fuel Management Plan⁸ encountered woodrat nests throughout the Strawberry and Claremont Canyon areas of the Hill Campus East.
- **Western leatherwood.** Western leatherwood is a perennial deciduous shrub that occurs on brushy slopes and mesic locations, typically in mixed evergreen and foothill woodlands. It has no formal listing under the ESAs but has a CRPR of 1B.2 (species considered rare or endangered in California and elsewhere) and is considered moderately threatened in California. The CNDDDB records indicate two occurrences in Strawberry Canyon (see Figure 5.3-2, Special-Status Plant Species) and numerous other populations were encountered during surveys conducted as part of the environmental review for the Wildland Vegetative Fuel Management Plan.⁹
- **Diablo helianthella.** Diablo helianthella is a perennial herb that occurs in scrub, chaparral, woodland, and grassland habitat, typically in partial shade. It has no formal listing under ESAs but has a CRPR of 1B.2 and is considered moderately threatened in California. The CNDDDB records indicate two occurrences in the upper elevations of Strawberry Canyon, as indicated on Figure 5.3-2, Special-Status Plant Species.
- **Nesting Birds and Roosting Bats.** In addition to protected special-status species, numerous other raptor species, such as great horned owl, red-shouldered hawk, red-tailed hawk, and American kestrel, most likely forage, roost, and nest in the upper watersheds of the Hill Campus East. Raptor nests in active use are protected from destruction under the MBTA and provisions in the California Fish and Game Code. There is also a possibility that one or more species of special-status bats forage and roost in the Hill Campus East. Special-status bats may use crevices in exfoliating tree bark, hollow cavities in trees, or abandoned and seldom used structures.

⁸ University of California, Berkeley, 2021, UC Berkeley Hill Campus, Wildlife Vegetative Fuel Management Plan, State Clearinghouse No 2019110389, prepared for University of California, Berkeley, Capital Strategies – Physical & Environmental Planning. The WVFMP and EIR were approved and certified on February 10, 2021.

⁹ University of California, Berkeley, 2021, UC Berkeley Hill Campus, Wildlife Vegetative Fuel Management Plan, State Clearinghouse No 2019110389, prepared for University of California, Berkeley, Capital Strategies – Physical & Environmental Planning. The WVFMP and EIR were approved and certified on February 10, 2021.

Clark Kerr Campus and City Environs Properties

The remaining UC Berkeley campus zones, the Clark Kerr Campus and the City Environs Properties, generally occur in urbanized areas with little or no remaining natural vegetation and limited wildlife habitat values. The upper elevations of the Clark Kerr Campus remain undeveloped and support native cover of grassland, woodland, and stands of eucalyptus, which continue into the Claremont Canyon Regional Preserve. No sensitive natural communities, special-status species, wetlands, or important wildlife movement corridors occur in the urbanized areas of the Clark Kerr Campus and the City Environs Properties.

Housing Project #1

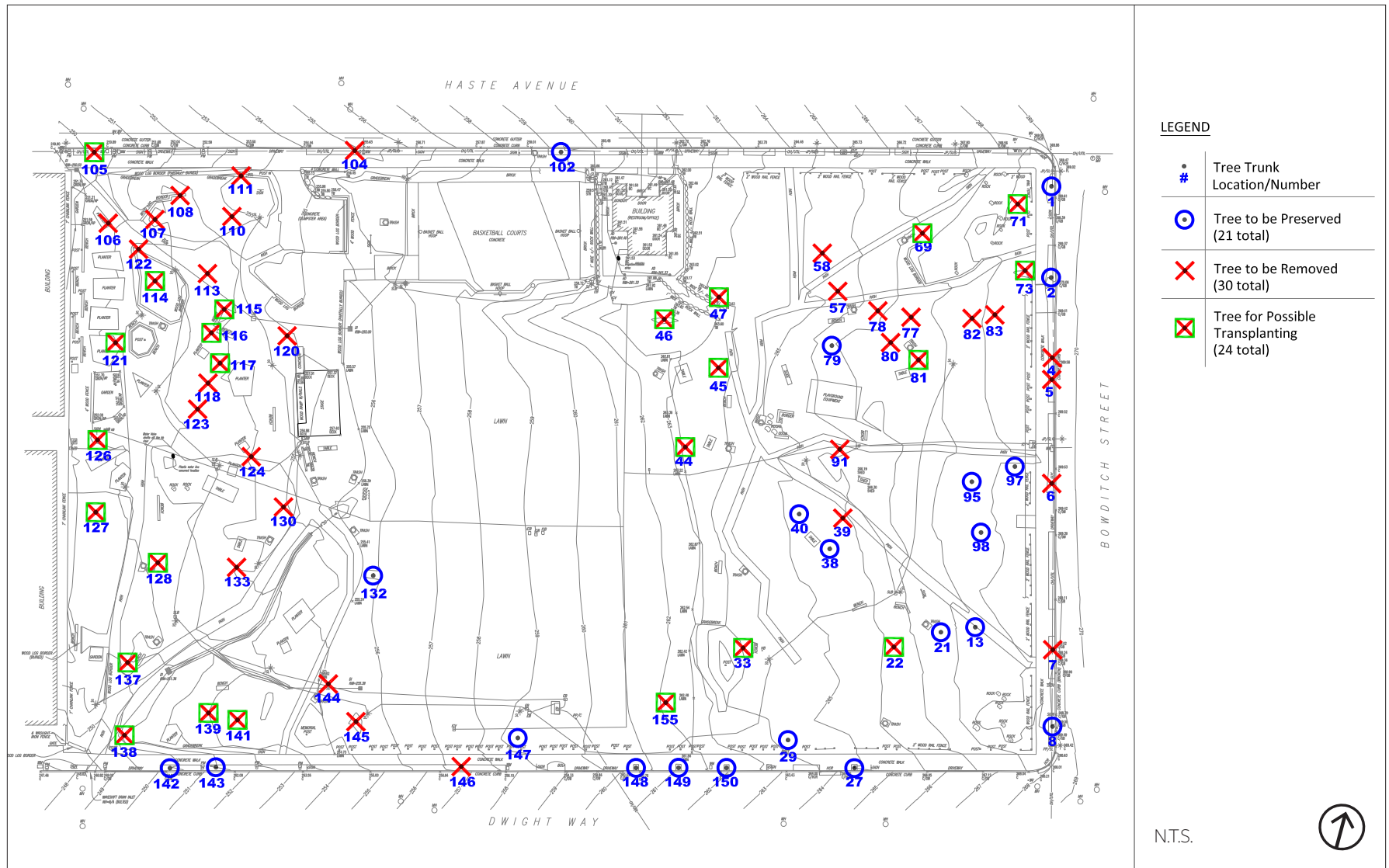
The Housing Project #1 site is occupied by existing structures, paved parking, and sidewalk frontages. A multi-trunk poplar grows in the side yard of the existing building at 1925 Walnut Street, with trunk diameters under 20 inches dbh. A 17-inch dbh sweetgum grows as a planted street tree along the Oxford Street frontage and an 18-inch dbh tulip tree occurs on the University Avenue frontage. Suitable habitat for special-status species is absent due to the developed condition, and no sensitive natural community types or regulated waters are present on the site.

Housing Project #2

The Housing Project #2 site supports a cover of scattered trees, shrubs, and irrigated turf, and includes a basketball court, pathways, picnic tables and benches, and a restroom building. People's Park includes specimen palms, redwoods, and pines in the northeastern portion of the site. Sensitive biological resources, such as special-status species, sensitive natural communities, and regulated wetlands, are absent on the site. Mature trees provide roosting and possible nesting locations for numerous species of birds, although no evidence of active nests was observed during the field surveys.

A tree assessment of People's Park was completed in 2014, creating an inventory and mapping of trees on the site at the time, including species, trunk diameter, tree number, and suitability for preservation.¹⁰ Figure 5.3-5, Housing Project #2 Tree Map, shows the distribution of existing trees on the site and street frontages, together with numbering from the tree assessment. These range in size, species, and condition. Many of the trees were planted as part of the volunteer plantings at People's Park in the late 1960s and 1970s, including a mixture of native and non-native ornamental species. Based on size, some of the larger trees predate the creation of People's Park, including a coast redwood (Tree #79), silver dollar gum (#147), and coast live oak (#29). Some trees have been removed from the site since the tree assessment was conducted because of safety hazards from poor health or death, to improve visibility into the site, and to reduce overcrowding and improve conditions for the remaining trees. An estimated 75 trees are present on the site and along the Haste Avenue, Bowditch Street, and Dwight Way frontages today.

¹⁰ HortScience, 2014, Tree Assessment, People's Park, University of California, Berkeley, CA, prepared for Capital Projects, University of California, July 2014.



Source: HortScience; 2014; Environmental Collaborative 2020; PlaceWorks 2021; University of California, Berkeley, 2020.

Figure 53-5
Housing Project #2 Tree Map

Wildlife habitat values on the site are limited due to the location in an urbanized area surrounded by existing development, limited vegetative cover, and absence of available surface water. Wildlife species associated with the site include those common in urban and suburban habitats, including Botta's pocket gopher, fox squirrel, house mouse, Norway rat, raccoon, scrub jay, brown towhee, black phoebe, sparrows, American robin, house finch, mourning dove, and European starling. No important wildlife movement corridors or nursery areas are present on the site.

5.3.2 STANDARDS OF SIGNIFICANCE

Based on the preliminary analysis in the Notice of Preparation (see Appendix A, Notice of Preparation and Scoping Comments, of this Draft EIR), it was determined that the LRDP Planning Area is not located within any area designated for an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved conservation plan. Therefore, this standard is not discussed further in this Draft EIR.

The proposed project would result in a significant biological impact if it would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.
3. Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
6. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.3.3 IMPACT DISCUSSION

As described under Section 5.3.1.2, Existing Conditions, the Hill Campus West, the Clark Kerr Campus, and the City Environs Properties are urbanized areas with little or no remaining natural vegetation and limited wildlife habitat values. The Strawberry Creek corridors and remaining undeveloped natural areas on the Campus Park and the undeveloped lands of the Hill Campus East provide important habitat and contain sensitive biological resources that could be affected by development and management practices anticipated under the proposed LRDP Update. Similarly, the upper elevations of the Clark Kerr Campus remain undeveloped and support native cover of grassland, woodland, and stands of eucalyptus, which continue into the adjacent Claremont Canyon Regional Preserve. However, the proposed LRDP Update

does not propose any land use changes in the undeveloped areas of the Clark Kerr Campus. No sensitive natural communities, special-status species, wetlands, or important wildlife movement corridors occur in the urbanized lands of the Hill Campus West, Clark Kerr Campus, and the City Environs Properties, with possible exception of nesting birds and roosting bats, the presence of which would be addressed by implementation of CBPs. Given the absence of any sensitive biological or wetland resources in these urbanized zones, no additional discussion or analysis is provided for these zones in this section of the EIR. The following provides an assessment of potential impacts of the proposed LRDP Update on those UC Berkeley campus zones, primarily the Campus Park and the Hill Campus East, where there remains a potential for presence of sensitive biological and wetland resources.

BIO-1	The proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
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LRDP Update

No special-status plant species are known or expected to occur on the Campus Park and the Hill Campus West, and essential habitat for most special-status animal species, such as California red-legged frog, Alameda whipsnake, and western pond turtle is absent from the Campus Park. However, there is a possibility that one or more raptor and other native bird species could establish nests in mature trees, in addition to the known nesting by peregrine falcon on the Sather Tower. Tree removal or construction in the immediate vicinity of a nest in active use could result in its abandonment, which would be a violation of the MBTA and California Fish and Game Code.

There is also a remote possibility that one or more species of special-status bat may occur in isolated building areas or mature trees with cavities or exfoliating bark in the Campus Park and the Hill Campus West. Although this potential for presence of any special-status bats is considered very low given the intensity of human activity in these largely urbanized areas, further evaluation of individual buildings as part of any future demolition or reuse would be necessary to confirm absence of any bat roosting locations.

The Hill Campus East has a higher potential for presence of special-status species that could be affected by future development and land management activities. The Hill Campus East is known to support Alameda whipsnake, San Francisco dusky-footed woodrat, western leatherwood, and Diablo helianthella, and contains suitable habitat for numerous other special-status animal and plant species. Further detailed surveys and assessment would be necessary as part of planning and feasibility studies in the Hill Campus East to assess any potential impacts on special-status species and define appropriate mitigation, where necessary. There is also a possibility that one or more species of raptor or other native bird species could establish nests in the vicinity of proposed development areas or locations where vegetation removal as part of fire safety or other land management activities are conducted in the Hill Campus East. Similarly, there is a remote possibility that one or more species of special-status bat use trees to be removed as part of new development, fire fuel reduction, and other land management activities.

Preconstruction surveys would typically be necessary to confirm whether proposed development or vegetation management activities would adversely affect nesting birds, roosting bats, or occurrences of other special-status species in the Hill Campus East. Preconstruction surveys for nesting birds and roosting bats would also be necessary where suitable habitat is present on the UC Berkeley campus. In the Hill Campus East, further detailed surveys and assessment would be necessary to confirm presence or absence of special-status species, determine potential impacts, and ensure appropriate mitigation is incorporated into future specific projects as part of planning and feasibility studies.

As part of the proposed project, UC Berkeley and future development projects would implement the biological resource (BIO) CBPs listed here, which have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP BIO-1 (Updated):** Avoid disturbance or removal of bird nests protected under the federal Migratory Bird Treaty Act and California Department of Fish and Game Code when in active use. This will be accomplished by taking the following steps.
 - If tree removal and initial construction is proposed during the nesting season (February 1 to August 31), a focused survey for nesting raptors and other migratory birds will be conducted by a qualified biologist within 14 days prior to the onset of tree and vegetation removal in order to identify any active nests on the site and surrounding area within up to 500 feet of proposed construction, with the distance to be determined by a qualified biologist based on project location. The site will be resurveyed to confirm that no new nests have been established if vegetation removal and demolition has not been completed or if construction has been delayed or curtailed for more than seven days during the nesting season.
 - If no active nests are identified during the construction survey period, or development is initiated during the non-breeding season (September 1 to January 31), tree and vegetation removal and building construction may proceed with no restrictions.
 - If bird nests are found, an adequate setback will be established around the nest location and vegetation removal, building demolition, and other construction activities shall be restricted within this no-disturbance zone until the qualified biologist has confirmed that birds have either not begun egg-laying and incubation, or that the juveniles from those nests are foraging independently and capable of survival outside the nest location. Required setback distances for the no-disturbance zone will be based on input received from the California Department of Fish and Wildlife and may vary depending on species and sensitivity to disturbance. As necessary, the no-disturbance zone will be fenced with temporary orange construction fencing if construction is to be initiated on the remainder of the site.
 - A report of findings will be prepared by the qualified biologist and submitted to the UC Berkeley's Office of Physical & Environmental Planning for review and approval prior to initiation of vegetation removal, building demolition and other construction during the nesting season. The report will either confirm absence of any active nests or confirm that any young are located within a designated no-disturbance zone and construction can proceed. No report of findings is required if vegetation removal and other construction is initiated during the non-nesting season and continues uninterrupted according to the above criteria.

- **CBP BIO-2 (Updated):** Avoid remote potential for direct mortality of special-status bats and destruction of maternal roosts. A preconstruction roosting survey for special-status bat species, covering the project construction site and any affected buildings, will be conducted during the months of March through August prior to commencement of any project that may impact suitable maternal roosting habitat on the Campus Park, the Hill Campus East, and other UC Berkeley properties with suitable roosting habitat, as defined below. The survey will be conducted by a qualified biologist no more than 30 days prior to initiation of disturbance to potential roosting habitat. In the Hill Campus East, surveys will be conducted for new construction projects prior to grading, vegetation removal, and remodel or demolition of buildings with isolated attics and other suitable roosting habitat, as defined below.

Suitable roosting habitat shall be determined as follows: In the Campus Park and other urbanized UC Berkeley properties, surveys will be conducted for construction projects prior to remodel or demolition of buildings with isolated attics. A report of findings will be prepared by the qualified biologist and submitted to the UC Berkeley project manager for review and approval prior to initiation of grading, vegetation removal, or construction activities. If any maternal roosts are detected during the months of March through August, construction activities will either stop or continue only after the roost is protected by an adequate setback approved by a qualified biologist. To the full extent feasible, the maternal roost location will be preserved, and alteration will only be allowed if a qualified biologist verifies that bats have completed rearing young, that the juveniles are foraging independently and capable of survival, and bats have been subsequently passively excluded from the roost location.

- **CBP BIO-3 (Updated):** During planning and feasibility studies prior to development of specific projects or adoption of management plans in the Hill Campus East, a habitat assessment will be conducted by a qualified biologist to assess any potential impacts on special-status species. Detailed surveys will be conducted where necessary to confirm presence or absence of any special-status species. Where required to avoid a substantial adverse effect on such species, in consultation with the California Department of Fish and Wildlife or the United States Fish and Wildlife Service as appropriate depending on the particular species, feasible changes to schedule, siting, and design of projects or management plans, or other measures developed in consultation with the California Department of Fish or Wildlife and the United States Fish and Wildlife Service, will be developed and implemented.

CBP BIO-1 through CBP BIO-3 establish a series of actions that UC Berkeley and future development must comply with to ensure that no adverse effects to special-status species would occur consistent with other existing federal, State, and UC regulations. These CBPs would serve to identify any sensitive resources and provide adequate avoidance or mitigation, and no indirect or secondary effects associated with their implementation are anticipated. The ongoing implementation of CBP BIO-1 through CBP BIO-3, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts to special-status species. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Implementation of these CBPs would serve to address the potential for the presence of nesting birds and roosting bats, and possible presence of special-status species, and would serve to reduce any potentially significant impact on special-status species to a *less-than-significant* level.

Significance without Mitigation: Less than significant.

Housing Project #1

The Housing Project #1 site is already developed with urban uses and the few trees on-site are exposed with no sign of potential bird nesting or bat roosting activity. Although considered highly unlikely given the developed condition of the site and limited nesting substrate, there is a remote possibility that one or more native bird species may establish a nest in the few trees on or near the site prior to construction. In addition, there is a very remote potential for roosting by one or more special-status bat species in the mature trees, although considered highly remote because of the extent of on-going human disturbance on the site. Implementation of CBP BIO-1 and CBP BIO-2 would ensure that appropriate pre-construction surveys are conducted and adequate avoidance of bird nests in active use or maternity bat roosts is provided during site construction. Implementation of these CBPs would serve to address any potentially significant impacts on special-status species and anticipated impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

No special-status plant species occur on the Housing Project #2 site due to the extent of past development and location in an urbanized setting. No special-status animal species are expected to occur in the vicinity of the site due to lack of suitable habitat and intensity of human activity. However, there is a remote possibility that one or more species of raptor or other native bird may establish a nest in the scattered trees on the site prior to construction. In addition, there is a remote potential for roosting by one or more special-status bat species in the mature trees, although this is considered unlikely because of the extent of ongoing human activity on the site. Implementation of CBP BIO-1 and CBP BIO-2 would ensure that appropriate preconstruction surveys are conducted and adequate avoidance of bird nests in active use or maternity bat roosts is provided during construction at the site. Implementation of these CBPs would serve to address any potentially significant impacts on special-status species and anticipated impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

BIO-2	The proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.
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LRDP Update

Sensitive natural communities in the Campus Park are limited to the remnant segments of riparian vegetation along Strawberry Creek. The Campus Design Standards call for protection of creeks and other wetlands, which would serve to protect the Strawberry Creek corridors across the Campus Park. No other sensitive natural community types are present on the Campus Park or the other urbanized UC Berkeley campus zones, outside of the Hill Campus East. Sensitive natural communities in the Hill Campus East include areas of well-developed riparian vegetation along Strawberry Creek and tributary drainages, freshwater seeps that also typically support riparian vegetation, remnant stands of native grasslands, and other cover types recognized by the CDFW as having a high inventory priority. While the stands of oak woodland and scattered specimen native coast live oaks are not recognized as a sensitive natural community by the CNDDDB, they are of concern to the CDFW and should be protected and avoided. Any development or land management activities in the Hill Campus East should identify, avoid, and enhance the remaining sensitive natural communities.

Under the proposed LRDP Update, as a CBP, UC Berkeley would eliminate or minimize the potential effect of future development under the proposed LRDP Update on sensitive biological resources by carefully guiding the location, scale, form, and design of new projects. The Landscape and Open Space Element in the proposed LRDP Update includes a number of objectives that provide important guidance to preserve and enhance the campus landscape and open space systems, continue efforts to restore Strawberry Creek, and protect and enhance natural areas:

- **Preserve and strengthen campus landscape and open space systems**, in coordination with new development and major renovations, and with mobility and infrastructure systems. Continue to invest in the maintenance, restoration, and renewal of landscape and open space features, and consider opportunities to reinforce and expand areas that contribute to interaction, recreation, and research.
- **Preserve the balance between open space and built areas.** Reinforce the open space armature of the campus and support new capital projects with complementary landscape and open space features that serve building occupants and the campus as a whole.
- **Improve the sustainability and resilience of landscape and open space systems** by prioritizing improvements that provide integrated sustainability, resilience, and ecological benefits.
- **Continue to steward Strawberry Creek** as a defining element of the Campus Park and Hill Campus (East and West), and as a sustainable and resilient natural resource.
- **Maintain and enhance the image and experience of the Campus Park as a welcoming and inclusive environment.** Enhance key gateways and wayfinding, and reinforce and expand areas that facilitate interaction, recreation, and research in the outdoor environment.
- **Continue to preserve, maintain, and reinterpret the Campus Park's landscape heritage**, including the Classical Core, campus glades, natural areas, and Strawberry Creek. Respect views towards the

Golden Gate across the Central Glades, as well as other vistas and views that reinforce the campus's physical structure.

- **Protect and enhance natural areas within the Hill Campus East and adjacent university properties** for ecological benefit, while accommodating research and energy resilience uses.

As part of the proposed project, UC Berkeley and future development projects would implement the biological resource (BIO) CBPs listed here, which have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP BIO-4 (Updated):** Future development projects will be designed to avoid substantial adverse effects on riparian habitat or sensitive natural communities. The Strawberry Creek Management Plan will continue to be revised and implemented, in consultation with the California Department of Fish and Wildlife, to include recommendations for habitat restoration and enhancement along specific segments of the creek on both the Campus Park and the Hill Campus East. This will include minimum development setbacks, targets on invasive species controls, appropriate native plantings, and in-channel habitat improvements such as retention of large woody debris and creation of deep plunge pools.
- **CBP BIO-5 (Updated):** During planning and feasibility studies prior to development of specific projects or implementation of management plans in the Hill Campus East, a habitat assessment will be conducted by a qualified biologist to identify and minimize potential impacts on riparian habitat, freshwater seeps, native grasslands, and other sensitive natural communities. Detailed surveys will be conducted at appropriate times where necessary to confirm and map the extent of any sensitive natural communities. A report of findings will be prepared by the qualified biologist and submitted to the UC Berkeley project manager for review and consideration as part of site planning and, when applicable, further environmental review. Where required to avoid a substantial adverse effect on such communities, in consultation with the California Department of Fish and Wildlife, feasible changes to schedule, siting, and design of projects or management plans will be developed and implemented. This may include creating replacement habitat, enhancing and protecting similar habitat types in alternative locations, or some combination of mitigation to ensure no net reduction in acreage and value of the affected sensitive natural community type.

Implementation of CBP BIO-4 and CBP BIO-5 would serve to identify any sensitive resources and provide adequate avoidance or mitigation to protect sensitive natural communities associated with Strawberry Creek in the Hill Campus East and Campus Park areas. The ongoing implementation of CBP BIO-4 and CBP BIO-5, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts to riparian habitat or other sensitive natural communities. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Implementation of these CBPs, together with Campus Design Standards and relevant objectives from the proposed LRDP Update, would serve to reduce any potential impacts of implementing the proposed LRDP Update on sensitive natural communities to a *less-than-significant* level.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The sites for Housing Projects #1 and #2 are currently developed with urban uses and riparian habitat or other sensitive natural communities are absent. Therefore, *no impact* from construction or operation on sensitive natural communities would occur as a result of implementing Housing Projects #1 and #2 and no mitigation would be required.

Significance without Mitigation: No impact.

BIO-3	The proposed project would not have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
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LRDP Update

Wetlands on the Campus Park are limited to the Strawberry Creek channel, which would generally be protected and enhanced in accordance with the SCMP, Campus Design Standards, and the Landscape Master Plan. As described under impact discussion BIO-2, provisions in the SCMP, Campus Design Standards, CBP BIO-4, and objectives in the proposed LRDP Update would serve to address any potential impacts on the Strawberry Creek corridor through the Campus Park. Any modifications to this feature would require authorization from the CDFW, RWQCB, and USACE, which regulate projects to ensure no net loss of wetland functions and values.

Strawberry Creek and its tributary drainages form the principal jurisdictional waters subject to the federal Clean Water Act and State jurisdiction in the Hill Campus East. However, there is also a potential for seeps and springs to occur in the Hill Campus East, most of which are hydrologically connected to the creek and tributary channels and could be subject to regulation by the USACE. Any future development would require identification of potential jurisdictional wetlands, as called for in current CBPs implemented by UC Berkeley. These areas would generally be avoided, but authorization for some fill or disturbance may be necessary.

As part of the proposed project, UC Berkeley and future development projects would implement the biological resource (BIO) CBPs listed here, which have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP BIO-4 (Updated):** Future development projects will be designed to avoid substantial adverse effects on riparian habitat or sensitive natural communities. The Strawberry Creek Management Plan will continue to be revised and implemented, in consultation with the California Department of Fish and Wildlife, to include recommendations for habitat restoration and enhancement along specific segments of the creek on both the Campus Park and the Hill Campus East. This will include minimum development setbacks, targets on invasive species controls, appropriate native plantings, and in-channel habitat improvements such as retention of large woody debris and creation of deep plunge pools.

- **CBP BIO-6 (Updated):** Proposed projects on the Campus Park and the Hill Campus East will be designed to avoid designated jurisdictional wetlands and waters along the Strawberry Creek channel. When a project has the potential to affect jurisdictional waters, wetlands will be mapped and the extent of jurisdictional waters verified by the U.S. Army Corps of Engineers during planning and feasibility studies prior to development of specific projects or implementation of management plans in the Hill Campus East. Any modifications to Strawberry Creek and other jurisdictional waters will be coordinated with jurisdictional agencies, including the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and Regional Water Quality Control Board, as necessary, with any necessary authorizations secured in advance. Where avoidance of designated jurisdictional wetlands and waters is infeasible, appropriate mitigation will be developed and implemented in accordance with applicable State and federal regulations.

Continuing implementation of CBP BIO-4 and CBP BIO-6 would serve to identify any sensitive resources and provide adequate avoidance or mitigation and would ensure that jurisdictional wetlands and waters are adequately identified and protected. The ongoing implementation of CBP BIO-4 and CBP BIO-6, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts to jurisdictional wetlands and waters. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

Implementation of CBP BIO-4 and CBP BIO-6, together with the relevant objectives from the proposed LRDP Update and Campus Design Standards, would serve to reduce any potential impacts of implementing the proposed LRDP Update on regulated wetlands and waters to a *less-than-significant* level.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The sites for Housing Projects #1 and #2 are currently developed with urban uses and regulated waters are absent. As described in detail in Chapter 5.9, Hydrology and Water Quality, appropriate best management practices would be implemented to prevent degradation of downgradient waters. Therefore, *no impact* on wetlands and regulated waters are anticipated as a result of implementing Housing Projects #1 and #2, and no mitigation would be required.

Significance without Mitigation: No impact.

BIO-4	The project could interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
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LRDP Update

Proposed development on the Campus Park and the Hill Campus East is not expected to interfere substantially with the movement of any resident or migratory wildlife, impede the use of important nursery

sites, or result in the destruction of sensitive wildlife habitat. Sensitive habitat features, such as the Strawberry Creek corridor, areas of native vegetation, and specimen landscaping, would generally be protected from future development and management activities. Protection of Strawberry Creek on the Campus Park and the Hill Campus East would serve to protect the major movement corridor for wildlife.

Proposed development would generally occur within areas of limited habitat value and would avoid sensitive habitat features such as Strawberry Creek, sensitive natural communities, and specimen trees. The Campus Park and other urbanized areas in the UC Berkeley campus are of limited wildlife habitat value due to the extent of past disturbance, lack of protective cover, and intensity of human activity. Avoidance of the sensitive habitat features and any essential habitat for special-status species would address potential impacts on important wildlife habitat, and no additional mitigation would be required.

Existing fencing currently impedes and obstructs opportunities for wildlife movement in a number of locations in the Hill Campus East. While fencing is necessary for security purposes, it does interfere with wildlife movement opportunities.

As part of the proposed project, UC Berkeley and future development projects would implement the biological resource (BIO) CBPs listed here, which have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP BIO-7 (Updated):** Proposed projects in the Hill Campus East will be designed to avoid obstructing important wildlife corridors to the full feasible extent. Before any new fencing is installed for security purposes, UC Berkeley will consider the effect of such fencing on opportunities for wildlife movement, and will avoid new or expanded fencing which would obstruct important movement corridors. If fencing is deemed necessary in an important movement corridor, UC Berkeley will explore fencing options that allow for wildlife movement.
- **CBP BIO-8 (Updated):** During planning and feasibility studies prior to development of specific projects or implementation of management plans in the Hill Campus East, a habitat assessment will be conducted by a qualified biologist to identify and minimize potential impacts on wildlife movement opportunities, including avoidance of new fencing across Strawberry Creek and tributary drainages. A report of findings will be prepared by the qualified biologist and submitted to the UC Berkeley project manager for review and approval prior to initiation of grading, vegetation removal, or construction activities.

Continuing implementation of CBP BIO-7 and CBP BIO-8 would ensure that any expansion of areas requiring controlled access and security would consider the effects of fencing on wildlife movement opportunities on the Hill Campus East. The ongoing implementation of CBP BIO-7 and CBP BIO-8, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts to wildlife movement. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

New buildings associated with the implementation of the proposed LRDP Update would alter existing physical characteristics of the EIR Study Area and could contribute to an increased risk of bird collisions and mortalities. Avian injury and mortality resulting from collisions with buildings, towers, and other

structures is a common occurrence in city and suburban settings. Some birds are unable to detect and avoid glass and have difficulty distinguishing between actual objects and their reflected images, particularly when the glass is transparent and views through the structure are possible. Nighttime lighting can interfere with movement patterns of some night-migrating birds, causing disorientation or attracting them to the light source. The frequency of bird collisions is dependent on numerous factors, including characteristics of building height, fenestration, and exterior treatments of windows and their relationship to other buildings and vegetation in the area; local and migratory avian populations, their movement patterns, and proximity of water, food, and other attractants; time of year; prevailing winds; weather conditions; and other variables.

For taller buildings and structures that extend above the existing urban fabric and height of vegetative cover, this could be a potentially *significant* impact unless appropriate bird safe design measures are incorporated into the building design.

Impact BIO-4: New buildings and structures would create potential impacts associated with increased risk of bird collisions.

Mitigation Measure BIO-4: Structures and buildings that are new or are taller than existing structures and buildings shall be designed to minimize the potential risk of bird collisions. This should at a minimum include the following design considerations and management strategies: (1) avoid the use of highly reflective glass as an exterior treatment, which appears to reproduce natural habitat and can be attractive to some birds; (2) limit reflectivity and prevent exterior glass from attracting birds in building plans by utilizing low-reflectivity glass and providing other non-attractive surface treatments; (3) use low-reflectivity glass or other bird safe glazing treatments for the majority of the building's glass surface, not just the lower levels; (4) for office and commercial buildings, interior light "pollution" should be reduced during evening hours through the use of a lighting control system programmed to shut off during non-work hours and between 10 p.m. and sunrise; (5) exterior lighting should be directed downward and screened to minimize illuminating the exterior of the building at night, except as needed for safety and security; (6) untreated glass skyways or walkways, freestanding glass walls, and transparent building corners should be avoided; (7) transparent glass should not be allowed at the rooflines of buildings, including in conjunction with green roofs; and (8) all roof mechanical equipment should preferably be covered by low-profile angled roofing or other treatments so that obstacles to bird flight are minimized. These strategies shall be incorporated at the direction of the Campus Architect during plan review, and the Campus Architect shall confirm the incorporation of these strategies into architectural plans prior to building construction.

Significance with Mitigation: Less than significant.

Housing Project #1

Given the urbanized location of Housing Project #1 site, no adverse impacts on wildlife movement opportunities are anticipated. However, the new building on the Housing Project #1 site could increase the risk of bird collision unless appropriate design considerations are made to reduce these risks. As described in Chapter 3, Project Description, of this Draft EIR, the proposed building would have 14 above ground levels and the roofline of the building would be approximately 165 feet above ground level on Berkeley Way and

Oxford Street, and approximately 175 feet above ground level on Walnut Street and University Avenue. Rooftop equipment, architectural screening and enclosures, and parapet walls would extend in varying places above the roofline up to a maximum total building height of 190 feet from Oxford Street. Proposed building elevations are shown on Figures 3-8 through 3-11. The project would have a potentially *significant* impact due to the increased risk of bird collision associated with construction of the new building on the site.

Impact: Same as Impact BIO-4.

Mitigation Measure: Same as Mitigation Measure BIO-4.

Significance with Mitigation: Less than significant.

Housing Project #2

Given the urbanized location of Housing Project #1 site, no adverse impacts on wildlife movement opportunities are anticipated. However, the new buildings on the Housing Project #2 site could increase the risk of bird collision unless appropriate design considerations are made to reduce these risks. As described in Chapter 3, Project Description, of this Draft EIR, the proposed student housing building would have multiple levels. The east wing would have 13 stories, the west wing would have 17 stories, and the south wing would have 7 stories. At its maximum height, the student housing building roofline on the west wing, the tallest wing of the proposed student housing building, would be approximately 200 feet when viewed from the west side of the project site, and approximately 190 feet when viewed from the east side of the project site. The proposed affordable and supportive housing building would be five stories (approximately 60 feet) tall. The project would have a potentially *significant* impact due to the increased risk of bird collision associated with construction of the new building on the site.

Impact: Same as Impact BIO-4.

Mitigation Measure: Same as Mitigation Measure BIO-4.

Significance with Mitigation: Less than significant.

BIO-5	The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
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LRDP Update

As described in Section 5.3.1.1, Regulatory Framework, the City of Berkeley and the City of Oakland General Plans and ordinances contain provisions for the protection of biological resources, including protections for sensitive habitat, trees, and waterways. However, as previously described, based upon its constitutional autonomy, UC Berkeley is not subject to local regulations. Therefore, no conflict and *no impact* would occur from implementation of the proposed LRDP Update related to local policies protecting biological resources.

While no impact would occur, potential future development from implementation of the proposed LRDP Update would comply with the Campus Specimen Tree Program and the Campus Design Standards, which protect biological resources, including sensitive habitat, trees, and waterways in the LRDP Planning Area, as discussed in Section 5.3.1.1, Regulatory Framework. Furthermore, UC Berkeley would implement CPB BIO-1 through CBP BIO-9 that, as described in impact discussions BIO-1 through BIO-4, would ensure the protection of special-status species, waterways and riparian habitat, and sensitive habitat, similar to the intent of the policies and ordinances for the City of Berkeley and the City of Oakland.

As part of the proposed project, UC Berkeley and future development projects would implement the biological resource (BIO) CBPs listed here. This list identifies the CBPs that have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP BIO-9:** Adverse effects to specimen trees and plants will be avoided. UC Berkeley will continue to implement the Campus Specimen Tree Program to reduce effects to specimen trees and flora. Replacement landscaping will be provided where specimen resources are adversely affected, either through salvage and transplanting of existing trees and shrubs or through new horticulturally appropriate replacement plantings, as directed by the Campus Landscape Architect.
- **CBP BIO-10:** Implementation of the recommendations of the Landscape Master Plan and subsequent updates, and project-specific design guidelines, will provide for stewardship of existing landscaping, and use of replacement and expanded tree and shrub plantings to improve the important open space characteristics and resilience of the Campus Park. Native plantings and horticulturally appropriate species will continue to be used in future landscaping, serving to partially replace any trees lost as a result of development.
- **CBP BIO-11 (Updated):** Trees and other vegetation require routine maintenance. As trees age and become senescent, UC Berkeley will continue to undertake trimming, thinning, or removal, particularly if trees become a safety hazard. Vegetation in the Hill Campus East requires continuing management for fire safety, emergency evacuation, habitat enhancement, and other objectives. This may include removal of mature trees such as native live oaks and non-native plantings of eucalyptus and pine. The Landscape Master Plan, Landscape Heritage Plan and their subsequent updates will provide guidance on potential species to replace trees that are removed, where appropriate.

Implementation of CBP BIO-9 through CBP BIO-11 would prevent adverse effects to trees and plants, and also serve the same intent as the City of Berkeley and the City of Oakland policies and ordinances to protect trees, landscaping, and other vegetation. As described in CBP BIO-9, future construction projects would avoid removal of larger trees and plants to the extent possible, including coast live oaks. CBP BIO-10 and CBP BIO-11 would provide for protection and maintenance of existing tree resources, including native coast live oaks. The ongoing implementation of CBP BIO-9 through CBP BIO-11, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts associated with policy conflicts. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction and short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Implementation of CBP BIO-9 through CBP BIO-11, the Campus Specimen Tree Program, and the Campus Design Standards would ensure consistency with the intent of the City of Berkeley and City of Oakland ordinances and policies protecting biological resources.

Significance without Mitigation: No impact.

Housing Project #1

Similar to the discussion for the proposed LRDP Update, implementation of Housing Project #1 would have *no impact* with respect to conflicting with local ordinances and policies protecting biological resources as UC Berkeley is not subject to local regulations. The site for Housing Project #1 is currently developed with urban uses and sensitive resources, and special-status species, sensitive natural communities, and regulated wetlands, are absent on the site. The two existing street trees do not meet the City of Berkeley or the UC Berkeley standards for protected or specimen trees. These two trees would be removed as part of the project and would be replaced with 18 proposed tree plantings along the frontages of the site. Where the new trees would be planted in the City of Berkeley right-of-way, while compliance with local policies is not required, the trees would be selected and planted consistent with street tree requirements in Chapter 8, Street Trees and Landscaping, of the City of Berkeley Downtown Area Plan and in cooperation with the City of Berkeley Urban Forestry staff.

Significance without Mitigation: No impact.

Housing Project #2

Similar to the discussion for the proposed LRDP Update, implementation of Housing Project #2 would have *no impact* with respect to conflicting with local ordinances and policies protecting biological resources as UC Berkeley is not subject to local regulations. Like Housing Project #1, sensitive resources such as special-status species, sensitive natural communities, and regulated wetlands are absent on the Housing Project #2 site, and existing trees would be removed and replaced in compliance with the UC Berkeley Campus Specimen Tree Program. As indicated on Figure 5.3-5, Housing Project #2 Tree Map, an estimated 21 of the 75 trees on the site and street frontages would be preserved and a minimum of 30 trees would be removed. An additional 24 trees have been identified for possible salvage and transplanting, based on their condition and suitability, although detailed plans for any relocation have not been prepared. Trees proposed for removal or transplanting include a range of species, size, and condition. Mature trees are at risk for decline and possible death as a result of disturbance to their canopy, trunk, and root systems. Even under careful construction practices supervised by a Certified Arborist, there remains a risk of loss when construction occurs in close proximity to trees to be retained, or individual trees that are to be relocated.

Detailed landscaping plans have not yet been prepared for Housing Project #2, but preliminary plans include plantings of native species such as coast live oak, California buckeye, California bay, madrone, and toyon. Pursuant to CBP BIO-10, UC Berkeley will determine which, if any, of the trees on the project site meet the criteria for a specimen tree consistent with the Campus Specimen Tree Program. Potential trees that may be preserved include the mature coast redwood (#79), silver dollar gum (#147), and coast live oak (#29) shown on Figure 5.3-5, Housing Project #2 Tree Map. As described in CBP BIO-10, the replacement

landscaping will be provided where specimen resources are adversely affected, either through salvage and transplanting of existing trees or through new horticulturally appropriate replacement plantings. As discussed previously under impact discussion BIO-2, the removal of existing trees and other plantings on the site would not affect a sensitive natural community type. Like Housing Project #1, where the new trees would be planted in the City of Berkeley right-of-way, the trees would be selected and planted in cooperation with the City of Berkeley Urban Forestry staff.

Significance without Mitigation: No impact.

BIO-6	The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to biological resources.
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LRDP Update

This section evaluates whether the proposed LRDP Update, in combination with other UC Berkeley and non-UC Berkeley projects that are reasonably foreseeable, would result in significant cumulative impacts to biological resources.

The geographic context for the analysis of cumulative impacts includes primarily the cities of Berkeley and Oakland. The analysis considers cumulative growth in these cities as represented by implementation of each city's General Plan, as well as the implementation of the LRDP for Lawrence Berkeley National Laboratory and foreseeable projects on the UC Berkeley campus. The lands to the south, north, and west of the Campus Park are extensively developed with urban uses, including residential, commercial, and institutional uses. Sensitive vegetation and wildlife resources are generally absent in the urbanized area surrounding the Campus Park due to the extent of past development. The eastern edge of the Southside area, along the upper slopes of the Clark Kerr Campus and the Smyth-Fernwald property, contain areas of undeveloped habitat, including areas of native woodlands and grasslands, and remnants of riparian habitat along the remaining segments of open creek channels. However, no proposed plan or project to develop this area is currently proposed over the horizon of this Draft EIR (2036-37).

Adverse effects to special-status species and other sensitive resources can combine to create a significant impact even when the effects of individual projects are not significant in themselves. The impacts of the proposed LRDP Update are reduced to less-than-significant levels with implementation of CBPs and mitigation measures described in impact discussions BIO-1 through BIO-6. The overall cumulative effect of the proposed LRDP Update and cumulative development would depend on the degree to which significant resources are protected or mitigated as part of site-specific developments and land management activities. This includes preservation of areas of sensitive natural communities, such as riparian woodland, riparian scrub, and native grasslands; protection of essential habitat for special-status plant or animal species; and avoidance and enhancement of wetlands. Most other projects in the cumulative setting are infill projects in an urbanized setting that would redevelop either developed sites containing ornamental landscaping or vacant, previously developed sites vegetated with plants characteristic of disturbed sites in urban areas. Although UC Berkeley is not subject to local regulations, other reasonably foreseeable non-UC Berkeley

projects in the cities of Berkeley and Oakland would be required to follow those jurisdictions' General Plan policies and regulations intended to protect sensitive resources. All cumulative projects would be required to adhere to applicable federal and State regulations and agency procedures to avoid and mitigate potential resources. Therefore, the project would not contribute to significant cumulative impacts and impacts are *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

Same as described for the proposed LRDP Update, the cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update in combination with other UC Berkeley and non-UC Berkeley projects that are reasonably foreseeable. The sites for Housing Projects #1 and #2 are in urbanized areas where sensitive biological resources are absent, which is the same setting for nearby cumulative projects listed in Chapter 5, Environmental Analysis. Sensitive vegetation and wildlife resources are generally absent in the urbanized area surrounding the Campus Park due to the extent of past development. Sensitive resources, such as special-status species, sensitive natural communities, and regulated wetlands, are absent on the Housing Project #1 and #2 sites. Any potential impacts on nesting birds, roosting bats, or bird collisions would be reduced to less than significant through implementation of CBP BIO-1 and CBP BIO-2, and Mitigation Measure BIO-4. Therefore, Housing Projects #1 and #2 would not contribute to any potentially significant cumulative impact, and the impacts are *less than significant*.

Significance without Mitigation: Less than significant.

5.4 CULTURAL RESOURCES

This chapter describes the potential cultural resources impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential cultural resource impacts, identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts. Discussion and impacts specific to tribal cultural resources are in Chapter 5.16, Tribal Cultural Resources, of this draft environmental report (Draft EIR).

This chapter is based on the following reports prepared for the proposed LRDP Update and Housing Projects #1 and #2, which are included in Appendix F, Cultural Resources Data, of this Draft EIR:

- Appendix F1, LRDP Cultural Resources Data, which includes the Historical Resources Technical Report, Long Range Development Plan Update, University of California, Berkeley, prepared in November 2020 by Architectural Resources Group, Inc.
- Appendix F2, Housing Project #1 Cultural Resources Data, which includes the Historical Resources Technical Report Housing Project #1 (Helen Diller Anchor House) prepared in November 2020 by Architectural Resources Group, Inc.
- Appendix F3, Housing Project #1 Cultural Resources Data, which includes the Historical Resources Technical Report Housing Project #2 (People's Park) prepared in November 2020 by Architectural Resources Group, Inc.

The following additional report was prepared for the proposed project and is not included in Appendix F because it contains confidential information on the location of archaeological resources and is therefore not available for public review.

Archaeological Resources Evaluation for the University of California Berkeley Long Range Development Program (LRDP) Draft Environmental Impact Report 2020, prepared in July 2020 by Archeo-Tec.

5.4.1 ENVIRONMENTAL SETTING

5.4.1.1 REGULATORY FRAMEWORK

Federal Regulations

The National Historic Preservation Act of 1966 established the National Register of Historic Places (National Register) as the official designation of historical resources, including districts, sites, buildings, structures, and objects. For a property to be eligible for listing on the National Register, it must be significant in American history, architecture, archaeology, engineering, or culture and must retain integrity in terms of location, design, setting, materials, workmanship, feeling, and association. Resources less than 50 years in

age, unless of exceptional importance, are not eligible for the National Register. Though a listing on the National Register does not prohibit demolition or alteration of a property, the California Environmental Quality Act (CEQA) requires the evaluation of project effects on properties that are listed on the National Register.

State

California Register of Historical Resources

The California State Historic Preservation Office maintains the California Register of Historical Resources (California Register). Historic properties listed or formally designated as eligible to be listed on the National Register, and State Landmarks and Points of Interest, are automatically listed on the California Register. Properties designated under local preservation ordinances or through local historical resource surveys may also be listed.

Eligibility for the California Register requires that a resource retain sufficient integrity to convey significance and importance. Location, design, setting, materials, workmanship, feeling, and association are key elements in considering a property's integrity. In addition, an important archaeological, historical, or tribal cultural resource is one that meets one or more of the below criteria:

- Is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
- Is associated with the lives of persons important to local, California, or national history.
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.
- It has yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation.

California Environmental Quality Act

Public Resources Code (PRC) Sections 21000 et seq. (CEQA) require lead agencies to determine if a proposed project would have a significant effect on historical resources, including archaeological resources. A project that may cause a “substantial adverse change in the significance of a historical resource” is considered to have a significant environmental effect (PRC Section 21084.1). A “substantial adverse change in the significance of an historical resource” means “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired” (CEQA Guidelines Section 15064.5(b)). The significance of a historical resource is “materially impaired” when a project does one of the following:

[D]emolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in the California Register; or

demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources... or its identification in a historical resources survey..., unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA. (Guidelines Section 15064.5(b)).

The term “historical resource” includes, but is not limited to: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the California Register; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency’s determination is supported by substantial evidence in light of the whole record (CEQA Guidelines Section 15064.5(a)).

CEQA applies to effects on archaeological sites as well. A lead agency must first determine whether the archaeological site is a historical resource pursuant to CEQA Guidelines Section 15064.5(a). If so, PRC Section 21084.1 applies. If an archaeological site does not qualify as a historical resource, but meets the definition of a unique archaeological resource, the site shall be treated in accordance with the provisions of PRC Section 21083.2. A unique archaeological resource is “an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.” (PRC Section 21083.2 [g])

If an archaeological resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment with respect to that particular, cultural resource (CEQA Guidelines Section 15064.5[c][4]).

Public Resources Code

Section 5097.5(a) of the PRC specifies that a person shall not knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, or archaeological sites, which can include fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological or historical feature, situated on public lands, except with the express permission of the

public agency having jurisdiction over the lands. In addition, PRC Section 5097.98 sets a procedure for handling and notification pertaining to the discovery of Native American human remains.

California Historic Building Code

The California Historical Building Code (California Code of Regulations, Title 24, Part 8) provides regulations for permitting repairs, alterations, and additions for the preservation, rehabilitation, relocation, reconstruction, change of use, or continued use of historical buildings, structures, and properties determined by any level of government as qualifying as a historical resource. A historical resource is defined in Sections 18950 to 18961 of Division 13, Part 2.7 of the Health and Safety Code and subject to rules and regulations in the California Historical Building Code.

California Health and Safety Code

Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the County Coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the Coroner must contact the California Native American Heritage Commission (NAHC).

Section 7052 of the Health and Safety Code regulates the disturbance of Native American cemeteries as a felony. This provision protects human remains and prohibits the disturbance or removal of human remains from any location other than a dedicated cemetery. The provision further identifies steps to follow in the event of accidental discovery or recognition of any human remains, directs the County Coroner to determine whether the remains are those of a Native American, and, if so, the coroner is required to contact the NAHC.

University of California, Berkeley

Landscape Heritage Plan

The Landscape Heritage Plan provides a framework for UC Berkeley in preserving its cultural and historical landscape, with many buildings on campus identified as historical resources. The following are goals and objectives from the Landscape Heritage Plan related to cultural resources:

- Respect the character of the historic landscapes in the Classical Core.¹
 - Evaluate extant features within historical landscapes and determine strategies for recommended treatments.
 - Integrate appropriate materials, textures, and patterns to complement historic landscapes.
 - Create compositions that supplement the historic landscape character.
- Integrate functional, aesthetic, and sustainable considerations.
 - Integrate functional, aesthetic, and sustainable considerations to create high quality landscapes.

¹ The Classical Core refers to a large, central portion of the Campus Park that is largely defined by beaux-arts neoclassical style architecture. (University of California, Berkeley Landscape Heritage Plan, 2004).

- Accommodate the use of sustainable materials in the landscape.
- Integrate and promote elements that are successfully used on campus.
- Provide a safe, accessible campus environment.
 - Integrate universal access standards in design.
 - Define and designate separate circulation routes for vehicles and pedestrians.
 - Provide adequate lighting, furnishings, and signage to accommodate day and night pedestrian use.

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues. Relevant sections of the Campus Design Standards are summarized below:

- In the event that artifacts, human remains, or other cultural resources are discovered during construction, the Contractor shall protect the discovered items, cease work for a distance of thirty-five feet radius in the area, and notify the Owner's Representative in writing. The Owner may retain an archaeological consultant to evaluate findings in accordance with standard practice and applicable regulations. Artifact recovery, if deemed appropriate, will be conducted during the period when construction activities are on hold.
- Development shall accommodate sites or areas of historical or archaeological significance. Approval shall be obtained before altering any archaeological, historical, or cultural resource eligible for, or listed on the National Register of Historic Places.
- If a utilities earthwork project is likely to affect a known cultural resource, mitigation shall be required by avoiding or reducing ground disturbance.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to cultural resources as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.4.3, Impact Discussion.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination

purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the cities of Berkeley and Oakland related to cultural resources which UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

City of Berkeley

The City of Berkeley has policies, programs, and standards related to cultural resources on City property through land use, zoning, area plans, and ordinances.

Berkeley General Plan

The City of Berkeley General Plan Urban Design (UD) and Preservation Element provides a comprehensive set of policies and supporting actions designed to guide the City's development and preservation on City property. These policies and actions provide techniques for the City to implement to protect its existing built environment and cultural heritage and comply with federal and State regulatory protection. Design considerations ensure that architecturally interesting features. Design characteristics and scale, and overall area character are considered as development projects are processed. Some of these policies and actions include:

- **Policy UD-1, Techniques.** Use a wide variety of regulatory, incentive, and outreach techniques to suitably protect Berkeley's existing built environment and cultural heritage.
- **Policy UD-2, Regulation of Significant Properties.** Increase the extent of regulatory protection that applies to structures, sites, and areas that are historically or culturally significant.
- **Policy UD-5, Architectural Features.** Encourage, and where appropriate require, retention of ornaments and other architecturally interesting features in the course of seismic retrofit and other rehabilitation work.
- **Policy UD-6, Adaptive Reuse.** Encourage adaptive reuse of historically or architecturally interesting buildings in cases where the new use would be compatible with the structure itself and the surrounding area.
- **Policy UD-9, Trees.** Wherever feasible and appropriate, tree replacement should emphasize maintaining historic planting patterns and native species and be consistent with the City of Berkeley 1990 Street Tree Policy or subsequent tree policies.

Landmarks Preservation Ordinance

The Landmarks Preservation ordinance, adopted in 1974, required the City of Berkeley to establish a list of potential buildings that should be considered for landmark, historic district, or structure of merit status. The Landmarks Preservation ordinance describes the criteria for structures, sites, and areas for landmark or historic designation, including, but not limited to, architectural merit and/or cultural, educational, or historic interest or value. Considerations may also include preservation as part of a neighborhood, a block, or a street frontage.

Downtown Area Plan and Downtown Berkeley Design Guidelines

The Downtown Area Plan establishes important design review measures for the City for its historic downtown with the goal of preserving and enhancing historic resources and encouraging new and complementary development. The Downtown Area Plan states that the character of new development must be considered based on good urban design for the downtown's historic setting, with historic buildings continuing to contribute continuity and character to the downtown's changing cityscape. The Downtown Berkeley Design Guidelines are based on the Secretary of Interior's Standards for the Treatment of Historic Properties.

Southside Plan

The Southside Plan, adopted by the Berkeley City Council in 2011, was developed for the Southside neighborhood, which is the location of the UC-owned property known as the People's Park. The Southside Plan includes a series of planning goals for future development and use of this property. Policy CC-F7 states that the City of Berkeley will continue to support exploring ways in which the property can better serve the Southside neighborhood, with an emphasis on several items, including stronger connections between the property and adjacent land uses, continued improvements to the landscaping, and adding interpretive signage to highlight the site's history.

City of Oakland

The City of Oakland regulates the treatment of historic resources through its planning and zoning regulations. The City of Oakland General Plan Historic Preservation Element was adopted by the Oakland City Council in 1994 and amended in 1998. It provides a comprehensive set of strategies designed to promote preservation of a wide array of historic properties and districts. The historic preservation element states specific procedures to protect archaeological resources, including mapping areas with high prehistoric potential, archival studies and determinations for new development, and surface reconnaissance by archaeologists.

5.4.1.2 EXISTING CONDITIONS

Definitions

Historical architectural resources include buildings, structures, objects, sites, and historic districts. These may also be referred to as "historic properties" or "historical resources."

Archaeological resources consist of prehistoric or historic-era archaeological resources. Prehistoric archaeological materials include: obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, milling slabs). Historic-era archaeological materials (not associated with military installations or activities) include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. Similar to historic-era architectural resources, archaeological resources that are listed in or are eligible for listing on the National Register are considered "historic properties." Archaeological resources that are listed

in or are eligible for listing in the California Register are considered “historical resources.” In addition, archaeological resources can be considered “unique archaeological resources” under CEQA.

LRDP Update

The following provides a general summary of the setting of the UC Berkeley campus and is not intended to be a comprehensive description.

Natural Setting

The EIR Study Area, as described in Chapter 3, Project Description, of this Draft EIR, consists of five zones—the Campus Park, the Hill Campus West, the Hill Campus East, the Clark Kerr Campus, and the City Environs Properties. The Campus Park and the Clark Kerr Campus are in the lowland flats at the foot of the Berkeley/Oakland hills, and the Hill Campus West and the Hill Campus East are in the rocky highlands of the Strawberry Canyon watershed and the Berkeley/Oakland hills. Prior to development, the rocky highlands of the Berkeley/Oakland hills consisted of grassy, rocky, coastal scrub, with stands of oak redwood, madrone, and laurel trees lining the streams in the canyons. Eucalyptus trees were introduced in the early 1900s by timber speculators.² The lowlands at the foot of the Berkeley/Oakland hills, also known as the Berkeley Plain, was covered by bunch grass and riparian corridors. The primary stream in the EIR Study Area is Strawberry Creek, which flows from the Berkeley/Oakland hills through the Campus Park, carrying water and sediment downslope from the hills to the flatlands. Over the millennia, the creeks of the plain have changed flow levels and watercourses as the surface topography and water table changed due to erosion, sediment transport, and deposition.

Both the rocky highlands and the lowlands of the EIR Study Area are part of the Pacific Coast Ranges of the San Francisco Bay Region, bounded by the Hayward and Wildcat faults. The geologic sequence of the Berkeley/Oakland hills is confined to the Miocene-age units. From oldest to youngest, they are the Sobrante Formation; the Claremont Chert; the Orinda Formation; the Moraga Formation; the Siesta Valley Formation; and the Bald Peak Basalt, which are tilted at angles caused by uplift. The oldest rocks in the area are of the Jurassic- and Cretaceous-aged Franciscan Complex. Strawberry Creek has cut through these layers of rocks, exposing, mixing, and redistributing sediment on the plain below. As a result, the Berkeley Plain is composed of multiple coalescing alluvial fans that overlie Franciscan bedrock. The uppermost, young alluvial deposits are composed of gravel, sand, silt, and clay are moderately to poorly sorted and moderately to poorly bedded. In geoarchaeological terms, young alluvial deposits from the Late Holocene represent the zone of sensitivity for subsurface prehistoric cultural deposits.

Prehistoric Context

The San Francisco Bay region has been occupied by humans for at least 12,000 years. Sites dating to the Early Holocene/Lower Archaic between 8000 and 3500 BC are extremely rare, though at least one has been recorded. During this time people were largely mobile foragers using large leaf-shaped projectile points and

² Archeo-Tec, 2020, *Archaeological Resources Evaluation for the University of California Berkeley Long Range Development Program (LRDP) Draft Environmental Impact Report 2020*. This report is confidential and not available for public review.

handheld milling stones. The Early Period/Middle Archaic, between 3500 and 500 BC, saw increased stone technologies, trade, and sedentism. Many sites dating to this period in the San Francisco Bay region are shellmounds, midden sites containing large quantities of mollusk shells. Over 400 shellmounds around the San Francisco Bay were recovered in the early 20th century. One such site near the EIR Study Area is the West Berkeley shellmound, which was situated at the mouth of Strawberry Creek at the San Francisco Bay approximately two miles west of the Campus Park and was occupied by humans as early as 4,000 years ago. The West Berkeley shellmound yielded artifacts such as stone net sinkers; an abundance of mortars, pestles, and bone implements; rectangular shell beads; weapon tips and knives, and bi-pointed bone objects. These shellmounds and prehistoric context of the region indicate the potential for archaeological resources to be found in the EIR Study Area.³

Ethnographic Background

Prior to European arrival in the 18th century, the EIR Study Area was in territory occupied by the Ohlone people, specifically the Huchiun Ohlone who spoke the Chochenyo Ohlone dialect. The Ohlone culture may have come from the fusion of Hokan and Utian cultures. The proto-Utian migration—one of an estimated three major migrations of the Penutian-speaking peoples—entered California from the Great Basin and settled the Sacramento/San Joaquin Basin, likely coming in contact with existing Hokan populations after spreading further west after 2,000 BC. Linguistic affiliation with the Ohlone included up to seven distinct language branches.⁴

The Ohlone were semisedentary collectors and hunters of fish and game, although they probably ate primarily plant foods. Resources used included vegetal resources for creating nets, cords, and baskets; animal remains and shells for various tools and ornamentation; pelts and feathers for clothing and bedding; and local rock and mineral resources for tools and trading. The shellmounds, described under Prehistoric Context, above, were often used as major village centers by the Ohlone. However, the earliest shellmound components date to approximately 2,000 years before the arrival of the Ohlone, and the identity of the earliest inhabitants remains unclear. The family household was the basic social unit made up of around 15 individuals, and multiple families made up clans. Tribelets, or groups of interrelated villages under political leadership of a single headman, consisted of around 200 people and served as autonomous political units. An estimated 10,000 Ohlone lived in the Bay Area in 1770, but by AD 1810, much of their native population and culture were destroyed by the encroachment of Europeans and the resulting impacts from disease, warfare, displacement, and the California mission system.⁵

³ Archeo-Tec, 2020, Archaeological Resources Evaluation for the University of California Berkeley Long Range Development Program (LRDP) Draft Environmental Impact Report 2020. This report is confidential and not available for public review.

⁴ Archeo-Tec, 2020, Archaeological Resources Evaluation for the University of California Berkeley Long Range Development Program (LRDP) Draft Environmental Impact Report 2020. This report is confidential and not available for public review.

⁵ Archeo-Tec, 2020, Archaeological Resources Evaluation for the University of California Berkeley Long Range Development Program (LRDP) Draft Environmental Impact Report 2020. This report is confidential and not available for public review.

Historical Overview

Spanish and Mexican Period (1769 to 1848)

The Spanish and Mexican Period began around 1769, when Spanish explorers first arrived in the San Francisco Bay. An expedition reached what is now known as the East Bay in 1770. By 1832, it is estimated that the Native American population had declined by 80 percent due to conflicts and diseases brought by the Europeans. Native peoples were relocated to various Franciscan missions established throughout the region in efforts to convert them into Spanish citizens and to Catholicism, with highly regimented lifestyles designed to separate them from their families, culture, language, and religion. The lands where the EIR Study Area is located were part of the East Bay ranch holdings of Mission Dolores in present-day San Francisco, and later Mission San José in present-day Fremont. When Mexico gained independence from Spain in 1822, these mission lands were supposed to be granted to the Native Americans residing in the area. However, Mexican authorities offered generous land grants to prominent families and military officers, and by the end of 1823, private landholders had taken control of the entire East Bay shore north of San Leandro Creek. Present-day Berkeley and surrounding areas were part of a large grant called Rancho San Antonio, where primary economic activities included cattle ranching and logging. The Spanish and Mexican period lasted until around 1848.

California Statehood and Campus Beginnings

The California Gold Rush, starting in 1848, combined with California statehood in 1850, drew many more settlers to the area. Permanent settlement and development of the East Bay region began in the 1850s. Anglo-American pioneers soon claimed ownership of much of the land within what was formerly the Rancho San Antonio lands. The first intensive settlement in the East Bay region was in present-day downtown Oakland, which was incorporated as a town in 1852. Alameda County was established in 1853.

The College of California was chartered in Oakland in 1855 as a college preparatory school under the direction of Congregational minister Henry Durant. The institution had originally been established in 1852 as the Contra Costa Academy. In 1860, the College purchased a 160-acre tract of land on Strawberry Creek to establish a new, expanded campus. Founders' Rock, located at the corner of present-day Hearst Avenue and Gayley Road, marks the spot where the Trustees of the College of California dedicated the site of their new campus. The College collaborated with the State of California's Agricultural, Mining, and Mechanical Arts College. Under the provisions of the Morrill Act, Governor Henry H. Haight signed a law granting a charter to the University of California. The University of California came into existence on March 23, 1868. In 1869, the former College of California transferred its property and interests to the University of California. The University of California moved to the newly constructed Berkeley campus in 1873.

Early UC Berkeley Campus Development

Frederick Law Olmsted, a renowned landscape architect and urban planner, was hired in 1864 by the College of California to develop the UC Berkeley campus's master plan. Olmsted designed it to leverage the campus's varied topography and panoramic views of the San Francisco Bay; UC Berkeley's historic buildings and layout designed from this time period are referred to as the "Picturesque Era" (see Chapter 5.1, Aesthetics). The alignment of the residential street, Piedmont Way, designed by Frederick Law Olmsted in

1865, is partially retained at the east boundary of the Campus Park. Building off of Olmsted's design, architect David Farquharson was commissioned after the College of California became UC Berkeley to develop a new master plan. The first buildings erected under the Farquharson plan were North Hall and South Hall in 1873.

Development on UC Berkeley's campus expanded steadily along with the city of Berkeley, which incorporated in 1878. The Harmon Gymnasium, Mining and Mechanical Arts Building, Bacon Library, Chemistry Building, and the Mechanical and Electrical Engineering Building were constructed in the 1870s through 1890s. Since then, all of these buildings have been demolished to accommodate evolving program needs. South Hall remains the oldest extant building on the UC Berkeley campus after North Hall was demolished in 1931. UC Berkeley began incorporating on-campus housing in the 1870s, with the construction of eight small cottages – the Kepler Cottages. These were also demolished by the 1930s, at which time UC Berkeley did not offer any on-campus student housing.

A number of buildings constructed in the 1890s in the areas adjacent to the UC Berkeley campus at the time, in the style of the Arts and Crafts movement, were later acquired by UC Berkeley. These include the Anna Head School for Girls on Bowditch Street,⁶ built in 1892 and acquired by UC Berkeley in 1963, now used for academic and campus life functions; the Beta Theta Pi Fraternity House at 2607 Hearst Avenue, built in 1893 and acquired by UC Berkeley in 1966, now the Goldman School of Public Policy; and the First Unitarian Church at 2401 Bancroft Way, built in 1898 and acquired by UC Berkeley in 1960, now used as a dance studio. While not part of the UC Berkeley's early campus development, the California School for the Deaf and Blind was established in 1866 and acquired by UC Berkeley in 1982, and is now the Clark Kerr Campus.

In 1897, philanthropist Phoebe Apperson Hearst made a donation to UC Berkeley and sponsored an international architectural competition to create a more cohesive campus environment. French architect Émile Bénard submitted the winning contribution in the beaux-arts style of architecture (see Chapter 5.1, Aesthetics). Bénard's plan embodied the principles of the École de Beaux Arts, including formal axes, bilateral symmetry, and monumental scale of buildings.

The John Galen Howard Era

John Galen Howard, who placed fourth in the Hearst competition, was appointed UC Berkeley's Supervising Architect in 1902 and oversaw the campus's physical development until 1924. Howard built upon the beaux-arts style of Bénard's plan, while establishing a distinct stylistic direction for its architecture and landscape. In his 1914 plan for the campus, Howard incorporated Bénard's plan, but also adopted Olmsted's axis to the Golden Gate, organic landscape forms, and informal clusters of buildings. He reinforced the axis to the Golden Gate by orienting buildings to the campus interior, along this central axis.

Howard designed several buildings in the Campus Park indicative of the beaux-arts architectural style, which have been noted as significant contributions to UC Berkeley's historical architecture and overall campus

⁶ There are several street addresses associated with the Anna Head property.

aesthetic. Howard's most significant buildings include: California Hall (1905); Hearst Memorial Mining Building (1907); Durant Hall (1911); Doe Library (1911); Wellman Hall (1912); Gilman, Hilgard, and Wheeler Halls (1917); and Haviland Hall and Physics South⁷ (1924).

The Kelham/Brown Era

Architect George W. Kelham became as campus supervising architect in 1927. Kelham designed several notable buildings on the UC Berkeley campus, including Bowles Hall (1929); Valley Life Sciences Building, the Central Heating Plant, and International House (1930); and McLaughlin Hall (1931). During Kelham's tenure, UC Berkeley started building student housing, including Bowles Hall and International House. When it was completed, International House, a Spanish Colonial Revival style complex, was the largest student housing complex in the Bay Area and the first coeducational residence west of the Mississippi. At the time it engendered controversy for housing male and female students, foreigners, and students of color under one roof.⁸

After Kelham's death in 1936, architect Arthur Brown Jr. was appointed his successor in 1938. During his tenure, Brown designed several notable campus buildings, including Sproul Hall (1940-41), Minor Hall (1941), Donner Laboratory (1941-42), and Doe Library Annex (1949). In addition, Brown oversaw construction of UC Berkeley's third student housing building, Stern Hall, in 1942.

The Postwar Campus Planning Era

The Postwar Campus Planning Era extends from 1945 to 1987. The student population at UC Berkeley grew significantly during and after World War II, consistent with similar growth at other colleges and universities across the nation that was fueled in part by the 1944 G.I. Bill. This growth required a new direction for UC Berkeley planning and development to accommodate the increased student body size; in 1956, as required by the UC Regents, UC Berkeley adopted its first LRDP. The UC Berkeley campus expanded by about 5.6 million square feet during the postwar era, including buildings designed in Modern architectural styles by noted architects including Clarence Mayhew, Joseph Esherick, John Carl Warnecke, Gardner Dailey, Demars and Rey, Wurster, Bernardi and Emmons, Anshen and Allen and Mario Ciampi, and others.

In addition, as both UC Berkeley and the City of Berkeley grew during this time UC Berkeley started looking outside of its historical campus boundaries for additional properties to accommodate new development. Among other buildings outside of the Campus Park, UC Berkeley acquired the former Anna Head School for Girls site in the City Environs Properties on Haste Street in 1963, and in 1982 acquired the former California School for the Deaf and Blind that was established in 1866 by the California State legislature. This is now the site of the Clark Kerr Campus.

⁷ The Physics South building was originally named LeConte Hall.

⁸ University of California, Berkeley, International House at UC Berkeley: History, <https://ihouse.berkeley.edu/about/history>, accessed November 9, 2020.

Archaeological Resources

The Archaeological Resources Evaluation conducted for the proposed project involved a records search and sensitivity analysis. The California Historical Resources Information System (CHRIS) on file at the Northwest Information Center holds all documents concerning archaeological resources identified in California. Based on this information as well as the geological and historical background of the EIR Study Area, predictive cultural sensitivity modeling was conducted to identify optimal areas for prehistoric-era land use and human habitation.

Prehistoric-Era Resources

Prehistoric-era archaeological resources include sites and isolated artifacts. A search of the CHRIS records for archaeological resources in the EIR Study Area or within 0.5 miles of the EIR Study Area was conducted in June of 2020. The records search identified seven prehistoric-era resources within the EIR Study Area and seven prehistoric-era resources within 0.5 miles of the EIR Study Area. One resource within the EIR Study Area and two within 0.5 miles were eliminated from further study due to insufficient evidence to support archaeological designations. Therefore, it was concluded that there are five recorded prehistoric-era archaeological resources in the EIR Study Area and six within 0.5 miles of the EIR Study Area. Archaeological resources included burials, obsidian fragments, and shell scatter.⁹

Historic-Era Resources

The CHRIS records search also identified nine historic-era resources within the EIR Study Area or 0.5 miles of the EIR Study Area. The most common type of resource are rock walls and old fence lines. One nineteenth-century site was identified. Because historical and archaeological resources were evaluated separately, historical resources were not added to the archaeological sensitivity analysis. In addition, the records search included three petroglyph sites of a larger area designated the Western Message Petroglyph District in the Berkeley hills. Most of these Western Message Petroglyphs have been assigned to the late nineteenth-century mining boom period. However, rock art is extremely difficult to date, and these three resources have unclear origins. Therefore, they were not included in the archaeological sensitivity analysis.

Archaeological Sensitivity Analysis

The archaeological sensitivity modeling involved a geospatial information system (GIS) analysis designed to identify the most likely locations where potentially significant prehistoric cultural resources may be in subsurface soils. The analysis factors in slope, proximity to known prehistoric-era cultural resources, and proximity to freshwater resources, particularly Strawberry Creek, since proximity to freshwater is one of the most important factors in site selection for habitation.

Results of the archaeological sensitivity analysis indicated that the EIR Study Area is potentially sensitive for prehistoric cultural resources. Approximately 18 percent of the total area was classified as moderately high

⁹ The locations of prehistoric sites are kept confidential to protect the integrity of archaeological sites; therefore, the locations of the archaeological resources are not identified in this report.

to extremely sensitive, with most of the sensitive areas in the Campus Park. Approximately 55 percent of the Campus Park was classified as moderately high to extremely sensitive. In comparison, only 5 percent of the Hill Campus (West and East combined) was classified as moderately high to extremely sensitive, likely due to the steep topography. In addition, 35 percent of the Clark Kerr Campus was classified as highly or moderately sensitive for prehistoric-era subsurface resources.

The archaeological sensitivity analysis includes some limitations. There is some evidence from the records search that the flat plain below the mouth of Strawberry Canyon may have once held several Native American habitation mounds; however, these locations were never formally recorded. In addition, locations of streams change over time, and identification of historical stream alignment is difficult without precise hydrology data. However, the analysis overall provides a representation of potential prehistoric cultural sensitivity for the EIR Study Area. Prehistoric cultural sensitivity specifically for Housing Projects #1 and #2 are discussed below.

Existing Designated Historic Resources

Since UC Berkeley's founding in 1868, many UC Berkeley-owned properties and buildings in the EIR Study Area have been identified as historic resources, typically due to architectural significance and age. These historic resources are described in the following sections and include properties at the project sites for Housing Projects #1 and #2.

National Historic Resource Listings

The National Register of Historic Places (NRHP) is the official list of the Nation's historic places worthy of preservation. Table 5.4-1, National Historic Resource Listings, shows that Room 307 of Gilman Hall is the one UC Berkeley-owned resource in the EIR Study Area that is listed as a National Historic Landmark. Room 307 of Gilman Hall is significant for its association with plutonium research that was conducted as part of the Manhattan Project, which resulted in the production of the Nation's first nuclear weapons during World War II. In addition, there are multiple UC Berkeley-owned resources in the EIR Study Area that are listed on the National Register. Bauer Wurster Hall is formally listed as being eligible for the National Register and is therefore included in this table.

TABLE 5.4-1 NATIONAL HISTORIC RESOURCE LISTINGS

Resource Name/NRHP No.	LRDP Zone	Year Built	Architect	Year Listed
Designated National Historic Landmarks				
Room 307, Gilman Hall (NRHP No. 6000203) *	Campus Park	1917	John Galen Howard	1965
Designated National Register Resources				
California Hall (NRHP No. 82004638) *	Campus Park	1905	John Galen Howard	1982
California Memorial Stadium (NRHP No. 06001086) *	Hill Campus West	1922	John Galen Howard	2006
Doe Library (NRHP No. 82004639) *	Campus Park	1911	John Galen Howard	1982
Durant Hall (NRHP No. 82004640) *	Campus Park	1911	John Galen Howard	1982
Edwards Stadium (NRHP No. 93000263) *	Campus Park	1932	Warren Perry, Stafford Jory	1993

TABLE 5.4-1 NATIONAL HISTORIC RESOURCE LISTINGS

Resource Name/NRHP No.	LRDP Zone	Year Built	Architect	Year Listed
Faculty Club (NRHP No. 82004641) *	Campus Park	1903	Bernard Maybeck	2007
First Unitarian Church (NRHP No. 81000143) *	Campus Park	1898	Albert Schweinfurth	1981
Founders Rock (NRHP No. 82004642) *	Campus Park	N/A	N/A	1982
Giannini Hall (NRHP No. 82004643) *	Campus Park	1930	William Charles Hays	1982
Girton Hall/Julia Morgan Hall (NRHP No. 91001473)	Campus Park (relocated to Hill Campus East)	1911	Julia Morgan	1991
Haviland Hall (NRHP No. 82002161) *	Campus Park	1924	John Galen Howard	1982
Hearst Memorial Gymnasium (NRHP No. 82004645) *	Campus Park	1927	Bernard Maybeck, Julia Morgan	1982
Hearst Memorial Mining Building (NRHP No. 82004646) *	Campus Park	1907	John Galen Howard	1982
Hilgard Hall (NRHP No. 82004647) *	Campus Park	1917	John Galen Howard	1982
Naval Architecture Building/Blum Hall (NRHP No. 76000475) *	Campus Park	1914	John Galen Howard	1976
North Gate Hall (NRHP No. 82004648) *	Campus Park	1906	John Galen Howard	1982
Physics North and South (NRHP No. 04000622) ^a	Campus Park	1924	John Galen Howard	2004
Sather Gate and Bridge (NRHP No. 82004649) *	Campus Park	1910	John Galen Howard	1982
Sather Tower (NRHP No. 82004650) *	Campus Park	1914	John Galen Howard	1982
Senior Hall (NRHP No. 74000506) *	Campus Park	1906	John Galen Howard	1974
South Hall (NRHP No. 82004651) *	Campus Park	1873	David Farquharson	1982
University House (NRHP No. 82004652) *	Campus Park	1911	Albert Pissis	1982
Wellman Hall (NRHP No. 82004653) *	Campus Park	1912	John Galen Howard	1982
Wheeler Hall (NRHP No. 82004654) *	Campus Park	1917	John Galen Howard	1982
Bowles Hall (NRHP No. 89000195) *	Hill Campus West	1929	George Kelham	1989
Hearst Greek Theatre (NRHP No. 82004644) *	Hill Campus West	1903	John Galen Howard	1982
State Asylum for the Deaf, Dumb and Blind (NRHP No. 82000962) *	Clark Kerr Campus	1914-1949	Office of the State Architect	1982
Building 1 – Administration	Clark Kerr Campus	1949	Office of the State Architect	1982
Building 2 – Suites	Clark Kerr Campus	1949	Office of the State Architect	1982
Building 3 – Residence Hall	Clark Kerr Campus	1948	Office of the State Architect	1982
Building 4 – Residence Hall	Clark Kerr Campus	1948	Office of the State Architect	1982
Building 8 – Maslach Hall	Clark Kerr Campus	1950	Office of the State Architect	1982
Anna Head School for Girls (NRHP No. 80000795) *	City Environs Properties	1895	Soule Edgar Fisher, Walter H. Ratcliff, Jr.	1980
Cloyne Court Hotel (NRHP No. 92001718) *	City Environs Properties	1904	John Galen Howard	1992
University Art Museum/Woo Hon Fai Hall (NRHP No. 13001034) *	City Environs Properties	1970	Mario Ciampi	2014
Weston Havens House (NRHP No. 05000597)	City Environs Properties	1940	Harwell Hamilton Harris	2005

TABLE 5.4-1 NATIONAL HISTORIC RESOURCE LISTINGS

Resource Name/NRHP No.	LRDP Zone	Year Built	Architect	Year Listed
Formally Determined Eligible for the National Register				
Bauer Wurster Hall	Campus Park	1964	Vernon DeMars, Donald Olsen, Joseph Esherick	2010, 2016

Notes: NRHP = National Register of Historic Places; Resources that are listed on the National Register are automatically listed in the California Register.

* Resources marked with an asterisk are also listed as City of Berkeley Landmarks.

a. The Physics South building was originally named LeConte Hall.

Source: Architectural Resources Group, November 2020. Historical Resources Technical Report, Long Range Development Plan Update, University of California, Berkeley.

California Historic Resource Listings

Resources that are listed on the National Register are automatically listed in the California Register. Therefore, all of the National Register resources previously listed in Table 5.4-1 are also on the California Register. Table 5.4-2, California Historic Resource Listings, shows the State historical resources that are *not* also on the National Register.

TABLE 5.4-2 CALIFORNIA HISTORIC RESOURCE LISTINGS

Resource Name	LRDP Zone	Year Built	Architect	Year Listed
Designated California Historic Landmarks (also listed in the California Register)				
University of California, Berkeley Campus (CHL No. 946)	Campus Park	(multiple)	(multiple)	1981
Piedmont Way (CHL No. 986)	(multiple)	1865	Frederick Law Olmsted	1989

Source: Architectural Resources Group, November 2020. Historical Resources Technical Report, Long Range Development Plan Update, University of California, Berkeley.

There are two UC Berkeley–owned resources in the EIR Study Area that are listed as California Historical Landmarks (CHL). The University of California, Berkeley Campus CHL encompasses the historic core of the Campus Park and includes the following buildings and features:¹⁰

- California Hall
- Durant Hall
- Doe Library
- Faculty Club and Glade
- Founders' Rock
- Giannini Hall
- Hearst Greek Theatre
- Hearst Gymnasium
- Hearst Memorial Mining Building
- Hilgard Hall
- North Gate Hall
- Sather Gate and Bridge
- Sather Tower and Esplanade
- South Hall
- University House
- Wellman Hall
- Wheeler Hall

¹⁰ California Office of Historic Preservation, "California Historic Landmarks: Alameda County," https://ohp.parks.ca.gov/?page_id=21388, accessed November 8, 2020.

The Piedmont Way CHL includes a span of Piedmont Way between Gayley Road and Dwight Way. It is a curvilinear, tree-lined parkway designed by Frederick Law Olmsted in 1865 and was his first residential street design.¹¹ The Piedmont Way CHL is the boundary between the Campus Park and the Hill Campus West, and also extends south into the city environs.

Local Historic Resource Listings

Within the EIR Study Area, 41 UC Berkeley-owned resources are locally listed as City of Berkeley Landmarks. Of these, 28 are concurrently listed on the National Register. The concurrently listed resources are indicated by an asterisk (*) in Table 5.4-1, National Historic Resource Listings. There are 13 additional resources in the EIR Study Area that are not listed on the National Register or the California Register, but are listed as City of Berkeley Landmarks. Three of these sites are in the Campus Park, and ten are in the City Environs Properties. Though UC Berkeley includes properties in both the cities of Berkeley and Oakland, no UC Berkeley-owned resources in the EIR Study Area are designated City of Oakland Landmarks. One resource in the EIR Study Area, the Ratcliff Apartment House, is a City of Berkeley Structure of Merit. It is in the City Environs Properties. Pursuant to the City of Berkeley's Landmark Preservation Ordinance, Structures of Merit do not meet the criteria for designation as Landmarks but are still "worthy of preservation as part of a neighborhood, a block or a street frontage, or as part of a group of buildings which includes Landmarks."¹² These are shown in Table 5.4-3, Local Historic Resource Listings.

TABLE 5.4-3 LOCAL HISTORIC RESOURCE LISTINGS

Resource Name	LRDP Zone	Year Built	Architect	Year Listed
Designated City of Berkeley Landmarks (not on the National Register or California Register)				
Earle C. Anthony Hall	Campus Park	1956	Joseph Esherick	2011
Eucalyptus Grove (confluence of north and south forks of Strawberry Creek)	Campus Park	1877	N/A	1996
Haas Pavilion	Campus Park	1933	George Kelham	1996
Beta Theta Pi Fraternity House (2607 Hearst Ave)	City Environs Properties	1893	Ernest Coxhead	1982
Commercial building (2154 University Avenue)	City Environs Properties	1911	George Anderson	2004
Richfield Oil Company/UC Garage (1952 Oxford St)	City Environs Properties	1930	Walter H. Ratcliff, Jr.	1981
Jones Child Study Center (2425 Atherton St)	City Environs Properties	1960	Joseph Esherick	2013
Epworth Hall (2521 Channing Way)	City Environs Properties	1927	James L. Plachek	1999
People's Park	City Environs Properties	1969	N/A	1984
Rose Berteaux Cottage (2350 Bowditch Street)	City Environs Properties	1930	Carl Fox	1999

¹¹ California Office of Historic Preservation, "California Historic Landmarks: Alameda County," https://ohp.parks.ca.gov/?page_id=21388, accessed November 8, 2020.

¹² City of Berkeley, 2020. Berkeley Municipal Code, Section 3.24.110 Landmarks, historic districts and structures of merit—Designation—Criteria for consideration.

TABLE 5.4-3 LOCAL HISTORIC RESOURCE LISTINGS

Resource Name	LRDP Zone	Year Built	Architect	Year Listed
Samuel Davis House (2547 Channing Way)	City Environs Properties	1899	William Mooser and Son	1984
Unit 1 High-Rises/Residence Hall 1 (2650 Durant Ave)	City Environs Properties	1959	John Carl Warnecke, Lawrence Halprin, William W. Wurster	2000
Unit 2 High-Rises/Residence Hall 2 (2650 Haste Street)	City Environs Properties	1960	John Carl Warnecke, Lawrence Halprin, William W. Wurster	2000
Designated City of Berkeley Structures of Merit				
Ratcliff Apartment House (2515 Channing Way)	City Environs Properties	1921	Walter H. Ratcliff, Jr.	1999

Source: Architectural Resources Group, November 2020. Historical Resources Technical Report, Long Range Development Plan Update, University of California, Berkeley.

Existing Historic Resource Eligibility Status

Resources Found Eligible Through Previous Survey Evaluation

In addition to federal, State, and locally designated historic resources, numerous UC Berkeley-owned resources were identified to be individually eligible for National Register, California Register, or local landmark listing through previous survey evaluations conducted prior to the LRDP Update Analysis. These resources are listed in Table 5.4-4, Resources Found Eligible through Previous Survey Evaluation.

TABLE 5.4-4 RESOURCES FOUND ELIGIBLE THROUGH PREVIOUS SURVEY EVALUATION

Resource Name	Eligibility Category	LRDP Zone	Year Built	Architect
2222 Piedmont Avenue (Charles E. Bancroft House)	National Register	Campus Park	1910	Fred D. Voorhees
2224 Piedmont Avenue (Charles A. Noble House)	National Register	Campus Park	1909	William A. Knowles
2232 Piedmont Avenue (Walter Y. Kellogg House)	National Register	Campus Park	1909	Julia Morgan
2234 Piedmont Avenue (B.P. Wall House)	National Register	Campus Park	1908	William C. Hayes
2240 Piedmont Avenue (Sigma Epsilon Fraternity)	National Register	Campus Park	1923	Gwynn Officer
2251 College Avenue (Zeta Psi Fraternity)	National Register	Campus Park	1920	Charles Peter Weeks
Alumni House and Patio	National Register	Campus Park	1954	Clarence W. Mayhew
Melvin Calvin Laboratory	National Register	Campus Park	1963	Michael Goodman
Cesar Chavez Student Center	National Register	Campus Park	1960	DeMars & Reay and Donald Hardison & Associates
Class of 1877 Sundial	National Register	Campus Park	1915	Clinton Day
Class of 1910 Bridge	National Register	Campus Park	1910	John Bakewell, Jr., Arthur Brown, Jr.

TABLE 5.4-4 RESOURCES FOUND ELIGIBLE THROUGH PREVIOUS SURVEY EVALUATION

Resource Name	Eligibility Category	LRDP Zone	Year Built	Architect
Donner Laboratory	National Register	Campus Park	1942	Arthur Brown Jr.
Dr. Martin Luther King Student Union Building	National Register	Campus Park	1961	DeMars & Reay and Donald Hardison & Associates
Eucalyptus Grove	National Register	Campus Park	1877	N/A
Giauque Laboratory (cupola in courtyard)	National Register	Campus Park	N/A	Clinton Day
Grinnell Natural Area	National Register	Campus Park	1864	N/A
Lawson Adit (tunnel)	National Register	Campus Park	1930	College of Mining
Observatory Hill (stairway and rock walls) ^a	Campus Park	1964	Thomas Church	Likely Eligible
Old Power House (Old Art Gallery)	National Register	Campus Park	1904	John Galen Howard
Stephens Hall	National Register	Campus Park	1923	John Galen Howard
Tilden Football Players Statue	National Register	Campus Park	1900	Douglas Tilden
Valley Life Sciences Building	National Register	Campus Park	1928	George W. Kelham
Women's Faculty Club	National Register	Campus Park	1923	John Galen Howard
Zellerbach Hall	National Register	Campus Park	1968	DeMars & Reay and Donald Hardison & Associates
Charter Hill (the Big "C")	National Register	Hill Campus East	1905	Classes of 1907 and 1908
Lawrence Hall of Science	National Register	Hill Campus East	1968	Anshen & Allen
Batchelder House/Smyth House, Smyth-Fernwald Property	California Register	City Environs Properties	1868/1911	Julia Morgan (1911 remodel)
International House (2299 Piedmont Avenue)	National Register	City Environs Properties	1930	George W. Kelham
People's Park	National Register	City Environs Properties	1969	N/A
Residence Hall 3 (2400 Durant Avenue)	Local Listing	City Environs Properties	1964	Carl Warnecke
Stern Hall	National Register	City Environs Properties	1942	Corbett & MacMurray and William Wurster

Notes:

a. Observatory Hill was found ineligible for listing in the National or California Registers as a site or cultural landscape; however, the Thomas Church-designed curved stairway and rock walls at the base of Observatory Hill were found to be eligible under Criterion C/3 (National Register Criterion C or California Register Criterion 3).

Sources: Architectural Resources Group, November 2020. Historical Resources Technical Report, Long Range Development Plan Update, University of California, Berkeley. Page & Turnbull, 2020, Draft University of California, Berkeley, Historic Resource Evaluations for: Donner Laboratory, Eucalyptus Grove, Grinnell Natural Area, Old Art Gallery.

Resources Evaluated for the LRDP Update Analysis

As a part of the proposed LRDP Update analysis, a preliminary assessment was conducted for resources that were developed prior to World War II and resources that date from 1945 to 1987 that correspond with UC Berkeley's expansion after World War II. The post-World War II resources were evaluated because these will become at least 50 years old within the 2036–37 academic year buildout horizon of this Draft EIR. These results are shown in Table 5.4-5, Pre-World War II Evaluated Resources, and Table 5.4-6, Post-World War II Evaluated Resources. These resources are organized into three categories:

- **Likely Eligible:** a resource that appears to be a representative example of an important prewar architectural style or otherwise appears to possess a historical association that would make it eligible for the California Register/National Register. Many of the resources in this category are associated with prominent architects of the period and appear to be good examples of those architects' work.
- **Potentially Eligible:** a resource that possesses aspects of an important prewar architectural style and/or is associated with a prominent architect of the period. Resources in this category exhibit less design distinction than those in the "Likely Eligible" category but warrant additional analysis to determine whether they satisfy any of the four California Register/National Register eligibility criteria.
- **Not Eligible:** a resource that does not appear to be historically significant because it possesses no known association with persons or events that would render it significant, and it lacks design distinction or has been substantially altered.

TABLE 5.4-5 PRE-WORLD WAR II EVALUATED RESOURCES

Resource Name	LRDP Zone	Year Built	Architect	Historic Status
Bernard Moses Hall	Campus Park	1931	George W. Kelham	Likely Eligible
Robert Gordon Sproul Hall	Campus Park	1941	Arthur Brown Jr.	Likely Eligible
Frederick G. Hesse Hall	Campus Park	1924	John Galen Howard	Potentially Eligible
2334 Bowditch Street	City Environs Properties	1920	Unknown	Not Eligible
Architects & Engineers Building	Campus Park	1929	W. P. Stephenson	Not Eligible
Central Heating Plant	Campus Park	1930	George W. Kelham	Not Eligible
Dwinelle Hall Annex	Campus Park	1920	John Galen Howard	Not Eligible

Sources: Architectural Resources Group, November 2020. Historical Resources Technical Report, Long Range Development Plan Update, University of California, Berkeley; Page & Turnbull, 2020, University of California, Berkeley, Historic Resource Evaluations for: Architects and Engineers Building, Central Heating Plant, Dwinelle Hall Annex.

TABLE 5.4-6 POST-WORLD WAR II EVALUATED RESOURCES

Resource Name	LRDP Zone	Year Built	Architect	Historic Status
Stephen D. Bechtel Engineering Center	Campus Park	1980	George Matsumoto	Likely Eligible
Raymond Earl Davis Hall	Campus Park	1967	Skidmore, Owings & Merrill	Likely Eligible
Doe Library Annex	Campus Park	1949	Arthur Brown Jr.	Likely Eligible
Alfred Hertz Memorial Concert Hall	Campus Park	1958	Gardner A. Dailey and Associates	Likely Eligible
Joel Henry Hildebrand Hall	Campus Park	1966	Anshen & Allen	Likely Eligible
Wendell M. Latimer Hall	Campus Park	1963	Anshen & Allen	Likely Eligible
Gilbert N. Lewis Hall	Campus Park	1948	E. Geoffrey Bangs	Likely Eligible
James K. Moffitt Undergraduate Library	Campus Park	1970	John Carl Warnecke & Associates	Likely Eligible
Morrison Hall	Campus Park	1958	Gardner A. Dailey and Associates	Likely Eligible
George C. Pimentel Hall	Campus Park	1964	Anshen & Allen	Likely Eligible
Sproul Plaza	Campus Park	1959	N/A	Likely Eligible

TABLE 5.4-6 POST-WORLD WAR II EVALUATED RESOURCES

Resource Name	LRDP Zone	Year Built	Architect	Historic Status
Walter A. Haas Clubhouse	Hill Campus West	1959	Wurster, Bernardi and Emmons	Likely Eligible
Building 5 - Child Care	Clark Kerr Campus	1954	Office of the State Architect	Likely Eligible
Building 6 - Faculty House	Clark Kerr Campus	1960	Office of the State Architect	Likely Eligible
Building 7 - Residence Hall	Clark Kerr Campus	1950	Office of the State Architect	Likely Eligible
Building 9 - Birk Hall	Clark Kerr Campus	1950	Office of the State Architect	Likely Eligible
Building 10 - Bakery Building	Clark Kerr Campus	1953	Office of the State Architect	Likely Eligible
Building 13 - Heating Plant & Maintenance Building	Clark Kerr Campus	1951	Office of the State Architect	Likely Eligible
Building 23 - Archives	Clark Kerr Campus	1952	Office of the State Architect	Likely Eligible
Building 25 - Golden Bear Recreation Center	Clark Kerr Campus	1955	Office of the State Architect	Likely Eligible
Main Courtyard enclosed by Buildings 1, 8 and 10	Clark Kerr Campus	1950	Office of the State Architect	Likely Eligible
Bernard Alfred Etcheverry Hall (2505 Hearst Ave)	City Environs Properties	1964	Skidmore, Owings & Merrill	Likely Eligible
Horace A. Barker Hall	Campus Park	1964	Wurster, Bernardi and Emmons	Potentially Eligible
Raymond Thayer Birge Hall	Campus Park	1964	Warnecke & Warnecke	Potentially Eligible
Anthropology and Art Practice Building	Campus Park	1959	Gardner A. Dailey and Associates	Potentially Eligible
Agnes Fay Morgan Hall	Campus Park	1953	Spencer & Ambrose	Potentially Eligible
William G. Simon Hall	Campus Park	1966	Wurster, Bernardi & Emmons	Potentially Eligible
Botanical Garden (complex)	Hill Campus East	(multiple)	Unknown	Potentially Eligible
Center for Independent Journalism (2483 Hearst Avenue)	City Environs Properties	1960	Unknown	Potentially Eligible
2111 Bancroft Way (Banway Building)	City Environs Properties	1961	Unknown	Potentially Eligible
Social Sciences Building	Campus Park	1964	Aleck L. Wilson and Associates	Not Eligible
Law Building	Campus Park	1951	Warren C. Perry (original); Wurster, Bernardi and Emmons (1966 addition)	Not Eligible
Clarence L. Cory Hall	Campus Park	1950	Corlett & Anderson	Not Eligible
Dwinelle Hall and Forecourt	Campus Park	1952	Weihe, Frick & Kruse	Not Eligible
Griffith Conrad Evans Hall	Campus Park	1971	Gardner A. Dailey, Yuill-Thornton, Warner & Levikow	Not Eligible
William F. Giauque Laboratory	Campus Park	1954	Reynolds & Chamberlain	Not Eligible
Isaias William Hellman Tennis Center	Campus Park	1983	Unknown	Not Eligible
Jackie Jensen Press Box	Campus Park	1986	Unknown	Not Eligible
John Alex McCone Hall	Campus Park	1961	Warnecke & Warnecke	Not Eligible
Ralph S. Minor Hall Addition	Campus Park	1978	Unknown	Not Eligible
Morrough P. O'Brien Hall	Campus Park	1959	Van Bourg & Nakamura	Not Eligible
Recreational Sports Facility	Campus Park	1984	Elbasani, Logan and Severin (ELS)	Not Eligible
University House Shed	Campus Park	1985	Unknown	Not Eligible
Mulford Hall	Campus Park	1948	Miller and Warnecke	Not Eligible
Field Station for Behavioral Research (complex)	Hill Campus East	1962	Unknown	Not Eligible
Shiing-Shen Chern Hall (17 Gauss Way)	Hill Campus East	1985	Shen/Glass Architects	Not Eligible

TABLE 5.4-6 POST-WORLD WAR II EVALUATED RESOURCES

Resource Name	LRDP Zone	Year Built	Architect	Historic Status
Building 24 - Recreation Maintenance	Clark Kerr Campus	1968	Office of the State Architect	Not Eligible
Lower Hearst Parking Structure (2451 Hearst Ave)	City Environs Properties	1967	Anshen and Allen	Not Eligible
Upper Hearst Parking Structure (1858 W La Loma Ave)	City Environs Properties	1971	Anshen and Allen	Not Eligible
University Hall	City Environs Properties	1981	Welton Becket & Associates	Not Eligible
2150 Kittredge Street (Oxford Court)	City Environs Properties	1985	Muller & Caulfield	Not Eligible
2200 Bancroft Way	City Environs Properties	1974	Unknown	Not Eligible
Oxford Tract Natural Resource Laboratory	City Environs Properties	1980	Unknown	Not Eligible
Oxford Tract South Greenhouse	City Environs Properties	1960	Unknown	Not Eligible
Oxford Tract Storage	City Environs Properties	1981	Unknown	Not Eligible
Ellsworth Parking Structure (2315 Ellsworth St)	City Environs Properties	1961	Unknown	Not Eligible

Sources: Architectural Resources Group, November 2020. Historical Resources Technical Report, Long Range Development Plan Update, University of California, Berkeley; Page & Turnbull, 2020, Mulford Hall, University of California, Berkeley, Historic Resource Evaluation.

Housing Project #1

Archaeological Background

Prehistoric-Era Archaeological Resources

The subsurface in the vicinity of the Housing Project #1 site consists of young alluvium ranging from 1.5 to 19 feet below ground surface that may be sensitive for potential cultural resources. More firm alluvial deposits below that date to the Early Holocene and Pleistocene and would likely not be sensitive for potential cultural resources because they predate human habitation of the area.¹³ The overall sensitivity analysis completed in the Archaeological Resources Evaluation concluded that portions of the Housing Project #1 site are sensitive for prehistoric-era archaeological resources. This is due in part to the project site's proximity to Strawberry Creek, which could have passed very near the project site at some time, increasing its sensitivity due to the variability of the subsurface that can be associated with Strawberry Creek. Variability in the upper layer of the subsurface may be caused by a combination of previous anthropogenic disturbances as well as natural formation processes associated with Strawberry Creek. In addition, the project site is within 1,500 feet of three previously identified prehistoric-era archaeological sites. Based on these possibilities, the soils beneath the Housing Project #1 project site may be considered sensitive for potentially significant prehistoric-era archaeological resources to a maximum depth of 19 feet.

¹³ Archeo-Tec, 2020, Archaeological Resources Evaluation for the University of California Berkeley Long Range Development Program (LRDP) Draft Environmental Impact Report 2020. This report is confidential and not available for public review.

Historic-Era Archaeological Resources

Utilities such as city sewer and water predate most of the development in the area, and trash collection was widespread by the early 1900s. Therefore, it is unlikely that important historic-period archaeological sites exist within the project site, and few such sites have been identified in the vicinity. Subsurface areas in the north-central portions of the Housing Project #1 site were characterized as most sensitive for potentially significant historic-era resources.

Early Development and Historical Overview

Downtown Berkeley evolved in the early 1900s into a central business and commercial district after experiencing an influx of new residents—around 20,000 displaced San Franciscans who moved across the Bay after the 1906 earthquake. The first indications of development on the Housing Project #1 site include use as part of a development called West Villa Lots in 1878. The project site has since undergone multiple redevelopments.

By 1894, the project site had only a two-story wood-shingled dwelling at 1922 Oxford Street. The two-story dwelling at 1925 Walnut Street (formerly Home Street) was constructed in 1901. By 1903, water and sewer infrastructure had been installed, and a single-story dwelling at 1923 Oxford Street as well as a two-story dwelling at 1933 Home Street/Walnut Street were added. An eight-unit apartment building was constructed in 1909 at 1921 Home Street/Walnut Street. Sanborn maps from 1911 indicate water and sewer infrastructure expansion along Home Street/Walnut Street, with a stable added to the 1922 Oxford Street property. A new two-story home was constructed at 1931 Home Street/Walnut Street, and an eight-unit apartment building was erected at 1917 to 1923 Home Street/Walnut Street. In the 1920s, Home Street was renamed Walnut Street, and a gas station was installed on the project site at the corner of University Avenue and Oxford Street. The home and stable at 1922 Oxford Street were removed in the 1920s.

In 1930, UC Berkeley built an automotive garage at the corner of Oxford Street and Berkeley Way on the Housing Project #1 site. This building was designed in the Spanish Colonial Revival Style by Walter H. Ratcliff, a well-known architect at the time. It is currently a Berkeley City Landmark and has been deemed eligible for listing in the California Register, as shown in Table 5.4-3, Local Historic Resource Listings, above.

By 1950 the only residential buildings still present were those at 1925 Walnut Street and 1921 Walnut Street, which have remained since their original construction. The remainder of the block had been developed primarily for automotive uses. The 1990 Oxford Street building property includes a small commercial building constructed in 1955. The 2161 University Avenue building is a commercial-use building constructed in 1939 and has had several alterations.

Historic Significance

Of the six parcels that make up the Housing Project #1 site, five have buildings and one property (1933 Walnut Street) has a surface parking lot. The historic building evaluations for the applicable five properties are discussed below.

- **1921 Walnut Street** The 1921 Walnut Street building is not currently listed in the National or California Registers, nor is it a City of Berkeley Landmark, Structure of Merit, or contributor to a historic district. According to the California Office of Historic Preservation, it is listed in the California Built Environment Resources Directory (BERD) with California Historical Resource Status Code (CHRSC) 3S, meaning that the property appears eligible for the National Register as an individual property through survey evaluation.¹⁴ A Historic Resources Inventory (HRI) form was completed in 1979 for the apartment building at 1921 Walnut Street, describing the building's appearance and history of development by William B. Heywood, a member of one of Berkeley's "pioneer families," but does not evaluate the property's significance under the criteria specified by the National or California Registers.¹⁵ The building was evaluated in 2020 and it was concluded that the building lacks association with important historical events or persons, and was found therefore to be ineligible for the California Register. Overall, the 1921 Walnut Street building does not possess historical significance and is not considered a historical resource for the purposes of CEQA.¹⁶
- **1925 Walnut Street.** The 1925 Walnut Street building is not currently listed in the National or California Registers, nor is it a City of Berkeley Landmark, Structure of Merit, or contributor to a historic district. It is listed in the California BERD with CHRSC 3S.¹⁷ An HRI form was completed for the 1925 Walnut Street dwelling in 1978, and the evaluation found it to be significant as "the last vestiges of Berkeley's residential character in the downtown environment" but did not evaluate it under the criteria set forth by the National or California Registers.¹⁸ In 2018, a joint historical assessment was completed by Knapp Architects for the 1925 Walnut Street dwelling and the 1952 Oxford Street University Garage, and concluded that the 1925 Walnut Street building lacks association with important historical events, trends, or persons and is neither the work of a master nor remarkable example of its architectural style, and was thus found ineligible for the California Register. Overall, the 1925 Walnut Street building does not possess historical significance and is not considered a historical resource for the purposes of CEQA.¹⁹
- **2161 University Avenue.** The 2161 University Avenue building is a commercial-use building constructed in 1939 and has had several alterations. The 2161 University Avenue property does not possess historical significance and is therefore not eligible for the National or California Registers. Overall, it is not considered a historical resource for the purposes of CEQA.
- **1952 Oxford Street.** The 1952 Oxford Street University Garage building was designated City of Berkeley Landmark #50 in 1981. The landmark application associated with the designation reiterates the importance of the building as one of Ratcliff's later works and notes that the garage is a fine example of the Spanish Colonial style that he used extensively in the 1920s and 1930s. The 2018 joint historical

¹⁴ California Office of Historic Preservation, 2003. California Historical Resources Status Codes. <https://ohp.parks.ca.gov/pages/1069/files/chrstatus%20codes.pdf>, accessed November 9, 2020.

¹⁵ Wright, Katherine R, 1978. Three Brown Shingle Houses on Walnut Street, State of California Department of Parks and Recreation Historic Resources Inventory Form.

¹⁶ Knapp Architects, 2020. 1921 Walnut Street Historical Assessment Letter Report.

¹⁷ California Office of Historic Preservation, 2003. California Historical Resources Status Codes. <https://ohp.parks.ca.gov/pages/1069/files/chrstatus%20codes.pdf>, accessed November 9, 2020.

¹⁸ Wright, Katherine R, 1978. Three Brown Shingle Houses on Walnut Street, State of California Department of Parks and Recreation Historic Resources Inventory Form.

¹⁹ Knapp Architects, 2018. 1952 Oxford Street and 1925 Walnut Street, Historical Assessment.

assessment completed by Knapp Architects for the University Garage and neighboring property at 1925 Walnut Street found the 1952 Oxford Street property eligible for listing in the California Register under Criterion 3 as the work of a master architect and identified the building's character-defining features such as its clay tile roofs, Moorish-arched openings, brick construction, and skylights.²⁰ The property is not listed in the California Register or National Register of Historic Places. It is listed in the California BERD with CHRSC 3S.²¹ Overall, it is considered a historical resource for the purposes of CEQA.

- **1990 Oxford Street.** The 1990 Oxford Street building does not possess historical significance and is therefore not eligible for the National or California Registers. Overall, it is not considered a historical resource for the purposes of CEQA.

Table 5.4-7, Housing Project #1 Site Historic Significance, provides a summary of the historic significance for this site.

TABLE 5.4-7 HOUSING PROJECT #1 SITE HISTORIC SIGNIFICANCE

Address	Year Built	Designations	Significance Under CEQA
1921 Walnut Street	1909	CHRSC 3S *	Not historically significant
1925 Walnut Street	1901	CHRSC 3S *	Not historically significant
2161 University Avenue	1939	N/A	Not historically significant
1952 Oxford Street	1930	City of Berkeley Landmark #50; CHRSC 3S *	Historically significant
1990 Oxford Street	1955	N/A	Not historically significant
1933 Walnut Street	N/A	N/A	Not historically significant

Notes:

* These resources are listed in the California Built Environment Resources Directory (BERD) with California Historical Resource Status Code (CHRSC) 3S, indicating that the property appears eligible for the National Register as an individual property through survey evaluation. This does not mean that the property is designated as or qualifies as a historically significant resource.

Source: Architectural Resources Group, November 2020. Historical Resources Technical Report, Housing Project #1 (Helen Diller Anchor House).

Historical Resources in the Immediate Vicinity

There are four existing historical resources within the immediate vicinity of the Housing Project #1 site. Resources within the “immediate vicinity” are defined as those across the streets of Berkeley Way, Oxford Street, University Avenue, and Walnut Street from the project site. These include the following:

- Acheson Physicians’ Building, located west of the Housing Project #1 site across Walnut Street at 2131 University Avenue, constructed in 1908, Berkeley Landmark #68, and listed on the California BERD with designation that it appears eligible for the National Register and has been recommended eligible for inclusion on the California Register.
- S.J. Sill & Co. Grocery & Hardware Store, located west of the Housing Project #1 site across Walnut Street at 2145 University Avenue, constructed in 1915, Berkeley Landmark #273, and listed on the

²⁰ Knapp Architects, 2018. 1952 Oxford Street and 1925 Walnut Street, Historical Assessment.

²¹ California Office of Historic Preservation, 2003. California Historical Resources Status Codes. <https://ohp.parks.ca.gov/pages/1069/files/chrstatus%20codes.pdf>, accessed November 9, 2020.

California BERD with designation that it appears eligible for the National Register and has been recommended eligible for inclusion on the California Register.

- Ernest A. Heron Building, located southwest of the Housing Project #1 site across Walnut Street and University Avenue at 2136 to 2140 University Avenue, constructed in 1915, and Berkeley Landmark #275.
- Martha E. Sell Building, located southwest of the Housing Project #1 site across Walnut Street and University Avenue at 2154 to 2160 University Avenue, constructed in 1911 to 1912, and Berkeley Landmark #274.

Housing Project #2

Archaeological Background

Prehistoric-Era Archaeological Resources

Soil borings from a site 500 feet west of Housing Project #2 found subsurface soils composed of alternating alluvial and fluvial deposits composed of clayey sands and weathered gravels to a depth of about 12 feet.²² This represents young alluvial deposits of the Late Holocene, which are potentially sensitive for prehistoric-era cultural resources. Below this depth, increasingly stiff sandy clays extend to approximately 50 feet below ground surface and are underlain by another layer of clayey gravel and sand. These lower layers are interpreted as predating human habitation of the area. Groundwater in the area was found around 12.5 feet below ground surface. While this information pertains to off-site areas, it is indicative of potential subsurface conditions at the project site.

The sensitivity analysis indicated that the Housing Project #2 site is sensitive for prehistoric-era archaeological resources, largely due to the fact that the historical alignment of a tributary of Derby Creek may have passed through this site. Derby Creek is currently culverted beneath the site. There are no previously identified prehistoric sites on the site, and if any do exist on-site, they would likely be buried below the depth of previous disturbances. The maximum anticipated depth of cultural deposits is about 12 feet below ground surface due to subsurface characterizations from the nearby geotechnical borings.

Historic-Era Archaeological Resources

The area of highest sensitivity for potentially significant historic-era cultural resources on the Housing Project #2 site is the original land parcel of the 2529 Dwight Way dwelling, built in 1878, which was located towards the center of what is now the project site. Privies, trash pits, and wells often contain deposits and artifacts that may be deemed significant. This home would have predated city utilities and trash collection and may have included a well. While there are no surface level remnants of a well, it is possible that subsurface portions remain if one existed. Because decommissioned wells were commonly used for refuse disposal, the undisturbed materials could provide archaeological information.

²² Archeo-Tec, 2020, Archaeological Resources Evaluation for the University of California Berkeley Long Range Development Program (LRDP) Draft Environmental Impact Report 2020. This report is confidential and not available for public review.

Significant ground disturbance from past developments is unlikely. Based on past records, the early 20th century homes may have had crawl space foundations, but not basements, meaning that the depth of initial ground disturbance from construction, while unknown, is likely to have been no more than a few feet, and the Housing Project #2 site appears to have had little topographical variation. In addition, site modifications over time have included shallow ground disturbance associated with demolition of early properties, trenching for utilities, and gardening. It is not anticipated that there was deep soil disturbance on-site.

People's Park holds important cultural and historical relevance to the community. From an archaeological perspective, it is not anticipated that events from modern history are likely to yield potentially significant archaeological resources. However, given the informal nature of the 1960s-era land use, it is not impossible that cultural materials could be present beneath the ground surface in addition to potential materials related to previous uses on the site.

Early Development and Historical Overview

Initial Development

In 1866, the College of California Homestead Association created a 160-acre development called the College Homesteads Tract to generate funds for building a new College of California campus in Berkeley. These lots extended from Shattuck Avenue to College Avenue and from Bancroft Way to Dwight Way. This area includes the Housing Project #2 project site. However, the lots did not achieve the finances needed for the new College of California campus, leading to the merge with the Agricultural, Mining, and Mechanical Arts College to become the University of California, Berkeley.

The Housing Project #2 site remained vacant until 1878, when a two-story building was developed at 2529 Dwight Way. This building was the home of the Dwight Way Club, a social organization, as indicated on 1903 Sanborn maps and from newspaper clippings from the time. A barn and water tank or well were also present behind the building; a well would have been a necessity for a building that predated municipal water, but water pipes had been laid by 1903, and text on Sanborn maps indicating whether this was a water tank or well is illegible. By 1911, the Housing Project #2 site had 21 residential structures. The lots on the project site were further expanded and subdivided, and additional buildings were added as the population in the area grew. Few changes occurred during the 1940s and 1950s, except for the addition of accessory dwelling units and conversion of homes into apartments or boarding houses.

Historic Events of the Late 1900s

The Housing Project #2 site was identified as one of several parcels that UC Berkeley planned to acquire when it adopted its first LRDP in 1956 that called for UC Berkeley expansion into adjacent neighborhoods in an effort to accommodate necessary development for student housing and other UC Berkeley facilities. Throughout the 1960s, the Regents of the University of California began using eminent domain to acquire residential parcels on this site. UC Berkeley intended to develop the land for parking, student housing, and office space; however, funds ran short during demolition in 1968, and though the lot was cleared, development activities were abandoned. The site remained undeveloped for nearly a year, and as the desire for more community open space in the neighborhood grew, this inspired residents, students, and

community organizers to transform the land into a park in 1969. In the context of the Vietnam War, student activists sought to transform the space into a communal space for the Free Speech Movement. Community members initially reached out to the City and UC Berkeley to ask that UC Berkeley develop a park on the site. However, in April and May of 1969, without the permission of UC Berkeley, thousands of residents contributed food, labor, and plants to create People's Park.

In the weeks after ground was first broken at People's Park, UC Berkeley took no action. Despite UC Berkeley announcements for construction, community development of the park and recreational activity continued through early May. On May 13, 1969, Berkeley police and UC Berkeley workers posted "no protesting" signs on all sides of People's Park, and around 75 people stood vigil at the site overnight to prevent redevelopment activities from proceeding. Before dawn on May 15, 1969, law enforcement officers from UC Berkeley's police force, the Berkeley Police Department, the Alameda County Sheriff's office, and the California Highway Patrol surrounded the park and instructed supporters of the park to leave the property or be arrested for trespassing. Most of the park supporters left, and three remaining people were arrested without further incident and charged with trespassing. With the park cleared, police supervised the area while workers erected a chain-link fence around its perimeter; meanwhile, protesters began to organize. Several thousand student protestors and park supporters moved from the Campus Park toward People's Park and were met by law enforcement officers before they reached Haste Street.

This confrontation escalated to violence between protestors and police. California Governor Ronald Reagan's Chief of Staff, Edwin Meese III, called in law enforcement from other jurisdictions. Eventually there were between 500 and 800 officers called in, and police used tear gas dispensed from helicopters, mass arrest tactics, and live ammunition to control protestors. One man was blinded, and another, James Rector, was killed. City officials later reported 43 protestors and bystanders injured by gunfire, and Herrick Memorial Hospital was forced to implement its disaster plan to admit and treat patients. In addition, several news outlets reported as many as 128 people injured. These events on May 15, 1969, became known as "Bloody Thursday."

Following the events on this day, the National Guard was called into the city. Protests and demonstrations continued through the week, with nearly 500 people arrested following a faculty-led march on May 22, 1969. Students at University of California campuses in Santa Cruz, Los Angeles, and San Diego held demonstrations as well in solidarity with People's Park protestors. In Sacramento, around 7,500 students marched on the capitol to demand withdrawal of the National Guard troops from Berkeley, and in San Francisco a benefit show was held with ticket sales to supplement a bail fund for those arrested in the course of the People's Park protests. UC Berkeley's own Academic Senate met on May 23, 1969, and devised a statement demanding immediate withdrawal of military and police forces, the removal of the fence around People's Park, and that part of the site be used as an experimental community-generated park. Protests continued through the end of May 1969, with a march of 20,000 to 30,000 people on May 30, 1969, that ended at People's Park, concluding peacefully and without the removal of the fence. Berkeley police dispersed this crowd without incident. National Guard troops were withdrawn on June 3, 1969.

A University of California Regents special committee met several times to discuss the future of People's Park, and ultimately the Regents voted to maintain control of the park and replace it with a parking lot and athletic field, and student dormitories at some point in the future, which was met with further protests.

The first anniversary of Bloody Thursday was marked with a peaceful rally of approximately 200 people who gathered at nearby Willard Park on May 15, 1970, and marched to the Campus Park. The following year, another demonstration was held, this time resulting in violent confrontation between protesters and police. Through the early 1970s, People's Park grew to symbolize suppression of the counterculture movement with regard to anti-Vietnam War activism. In one instance fencing was torn down and the intramural basketball courts were torn up by antiwar activists during a citywide protest in 1972 following President Nixon's announcement that the United States military would lay mines in North Vietnam's harbors. Other protesters attempted to offset these acts by planting trees and flowers in the site, though they were also dispelled by police officers with use of force.

Long-term plans for development at the project site have not materialized since these events—until now. In the following decades, proposed development for the site, such as efforts to construct athletic fields in 1971 and volleyball courts in 1991 as well as the construction of the existing public restroom and hazardous tree removal, have all been met with protesting and/or community opposition. Present use of the project site, which is still owned and managed by UC Berkeley, is predominantly by transient and underhoused people. Nevertheless, it is a City of Berkeley designated landmark.

Due to the changes over the years, much of the site's original features, such as the benches, playground, and art installations, have been removed, and few original landscape features from the 1960's and 1970's remain. Currently the site is characterized by features that have been planted, developed, or installed by community members, the City, and UC Berkeley following removal of the site's fencing in 1972.

Historic Significance

People's Park's historic significance stems from its association with social and political activism in Berkeley between 1969 and 1979, described above. A California HRI form was completed for People's Park in 1977, describing the property's appearance at the time and summarizing the activities that occurred at and around the park in 1969, but did not evaluate the property's significance with regard to the eligibility criteria of the National or California Registers. People's Park was designated as City of Berkeley Landmark #84 in 1984. It is not listed on the National Register or the California Register and is not recorded in the California BERD.

The Historical Resources Technical Report conducted for Housing Project #2—in Appendix F.3, Housing Project #2 Cultural Resources Data, of this Draft EIR—identified the following character-defining features that contribute to People's Park's ability to convey its historic significance:

- Location in Berkeley's Southside neighborhood, in close proximity to the University of California campus and commercial development along Telegraph Avenue.
- Relatively flat topography, at grade with the street and with no fencing, barriers, or other features that would control pedestrian movement into and through the park.
- Informal, improvisational design not adhering to any specific design philosophy or master plan.
- Varied landscape incorporating grassy open areas, trees, and gardens.

- Presence of public art installations and park furniture including benches, play equipment, and the People's Park Stage (1978).
- Public park characterized by community-driven development, use, and programming.
- Unrestricted public access with the right to assembly and free speech.

Furthermore, the Historical Resources Technical Report found that the People's Park satisfies Criterion A of the National Register and Criterion 1 of the California Register at the local level of significance for its association with social and political activism between 1969 and 1979. A draft National Register nomination for People's Park was submitted to the California Office of Historic Preservation in September 2020 by the People's Park Historic District Advisory Group, a 501(c)(3) nonprofit organization.²³ Currently, no formal action on the nomination has been taken by the Office of Historic Preservation.

Historical Resources in the Immediate Vicinity

There are 10 historical resources in the immediate vicinity of People's Park. Resources in the "immediate vicinity" are defined as those that lie directly opposite People's Park across Haste Street, Bowditch Street, and Dwight Way, and between People's Park and Telegraph Avenue. These include the following:

- National Register-listed Resources
 - First Church of Christ, Scientist, located east from People's Park across Bowditch Street at 2619 Dwight Way, constructed in 1910, City of Berkeley Landmark #5, and a National Historic Landmark listed as National Register #77000283.
- National Register-listed Resource and City of Berkeley Landmark
 - Anna Head School for Girls, located north of People's Park across Haste Street at 2538 Channing Way, with development occurring in 1892 and between 1911 and 1927, City of Berkeley Landmark #45, and National Register #80000795.
- City of Berkeley Landmarks
 - Mrs. Edmund P. King Building, located approximately 90 feet southwest of People's Park at 2502 Dwight Way, constructed in 1901, and City of Berkeley Landmark #267.
 - John Woolley House, located south of People's Park across Dwight Way at 2506 Dwight Way, constructed in 1876, and City of Berkeley Landmark #127.
 - Alexander C. Stuart House, located south from People's Park across Dwight Way at 2524 Dwight Way, constructed in 1891, and City of Berkeley Landmark #224.
 - George Edwards House, located south of People's Park across Dwight Way at 2530 Dwight Way, constructed in 1886, and City of Berkeley Landmark #204.
 - People's Bicentennial Mural, located approximately 40 feet west of People's Park at 2500 Haste Street, constructed in 1976, and City of Berkeley Landmark #122.
 - Casa Bonita Apartments, located northeast of People's Park across Bowditch Street and Haste Street at 2605 Haste Street, constructed in 1928, and City of Berkeley Landmark #226.
 - Baptist Divinity School, located south of People's Park across Dwight Way at 2511 Hillegass Avenue, constructed between 1918 and 1964, and City of Berkeley Landmark #215.

²³ People's Park is not currently included in a historic district.

- Lucinda Reames House No. 1, located south of People’s Park across Dwight Way at 2503 Regent Street, constructed between 1902 and 1903, and City of Berkeley Landmark #317.

5.4.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact to cultural resources if it would:

1. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
3. Disturb any human remains, including those interred outside of dedicated cemeteries.
4. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.4.3 IMPACT DISCUSSION

CUL-1	The proposed project would cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5.
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LRDP Update

As described in Chapter 3, Project Description, of this Draft EIR, the planning process for the proposed LRDP Update identified potential areas of change for renovation, redevelopment, and/or new development, where:

- Renovation projects would remodel existing structures.
- Redevelopment projects would entail the demolition of one or more existing structures and construction of new structures.
- New development projects involve new construction on currently undeveloped or underdeveloped sites.

These sites are dispersed throughout the UC Berkeley campus and include several designated and potential historical resources. The following tables summarize the historical resource status of these sites. The site identification or “ID” numbers listed in the tables in this chapter refer to the site ID numbers listed in Table 3-2, Potential Areas of New Development and Redevelopment, and Table 3-3, Potential Areas of Renovation Only, and shown on Figure 3-3, Potential Areas of New Development and Redevelopment, and Figure 3-4, Potential Areas of Renovation, in Chapter 3, Project Description.

Table 5.4-8, Designated Historic Resources Identified as Potential Areas of Redevelopment or Renovation, lists only designated historic resources that are in areas of potential redevelopment or renovation.

TABLE 5.4-8 DESIGNATED HISTORIC RESOURCES IDENTIFIED AS POTENTIAL AREAS OF REDEVELOPMENT OR RENOVATION

Site ID ^a	Name	Project Type	Historic Status
CP15	Edwards Stadium	Redevelopment	National Register listed, City of Berkeley Landmark
CP17	Haas Pavilion Addition ^b	Redevelopment	City of Berkeley Landmark
CP19	Hearst Mining Memorial Building ^b	Redevelopment	National Register listed, City of Berkeley Landmark
CP31	Wellman Courtyard	Redevelopment	Wellman Hall is listed on the National Register and is a City of Berkeley Landmark; designation may include Wellman Courtyard
HW3	Greek Theatre ^b	Redevelopment	National Register listed, City of Berkeley Landmark
CK1	Clark Kerr – Central	Redevelopment	Site overlaps with National Register District
CK2	Clark Kerr – Hillside	Redevelopment	Site overlaps with National Register District
CK3	Clark Kerr – NW	Redevelopment	Site overlaps with National Register District
CK4	Clark Kerr – SE	Redevelopment	Site overlaps with National Register District
CK5	Clark Kerr – SW	Redevelopment	Site overlaps with National Register District
CE5	Anna Head Complex ^b	Redevelopment	National Register listed, City of Berkeley Landmark
CE13	Housing Project #1	Redevelopment	Site includes City of Berkeley Landmark
CE14	Housing Project #2	Redevelopment	Site includes City of Berkeley Landmark
CP-a	Durant Hall	Renovation	National Register listed, City of Berkeley Landmark
CP-c	Hearst Memorial Gym	Renovation	National Register listed, City of Berkeley Landmark
CP-d	Hilgard Hall	Renovation	National Register listed, City of Berkeley Landmark
CP-g	North Gate Hall	Renovation	National Register listed, City of Berkeley Landmark
CP-i	Sather Tower	Renovation	National Register listed, City of Berkeley Landmark
CP-j	Senior Hall	Renovation	National Register listed, City of Berkeley Landmark
CP-k	South Hall	Renovation	National Register listed, City of Berkeley Landmark
CP-m	University House	Renovation	National Register listed, City of Berkeley Landmark
CP-n	Wellman Hall	Renovation	National Register listed, City of Berkeley Landmark
CE-c	Unit 1 High-Rises/Residence Hall 1	Renovation	City of Berkeley Landmark
CE-d	Unit 2 High-Rises/Residence Hall 2	Renovation	City of Berkeley Landmark

Notes.

a. Site IDs are shown on Figure 3-3, Potential Areas of New Development and Redevelopment, and Figure 3-4, Potential Areas of Renovation, in Chapter 3, Project Description, of this Draft EIR.

b. These potential areas of redevelopment could also include additions and/or renovations.

Source: Architectural Resources Group, November 2020. Historical Resources Technical Report, Long Range Development Plan Update, University of California, Berkeley

Five sites are not currently designated but were found to be eligible for the National Register or local landmark listing. These are in Table 5.4-9, Eligible Resources Identified as Potential Redevelopment or Renovation Projects. New development would only occur on sites that are undeveloped or underdeveloped. In addition, 15 sites were found to be potentially eligible historic resources based on preliminary survey work conducted by Architectural Resources Group as a part of this Draft EIR. These are sites that would either require further study to determine whether they are eligible for National Register, California Register, or local landmark listing, or are currently being evaluated for historic significance. Table 5.4-10, Potentially Eligible Resources Identified as Potential Redevelopment or Renovation Projects, lists these sites.

TABLE 5.4-9 ELIGIBLE RESOURCES IDENTIFIED AS POTENTIAL REDEVELOPMENT OR RENOVATION PROJECTS

Site ID ^a	Name	Project Type	Historic Status
CP6	Alumni House	Redevelopment	National Register eligible
CP8	Cesar E. Chavez Student Center	Redevelopment	National Register eligible
CP13	Donner Lab	Redevelopment	National Register eligible
CP27	Piedmont Site ^b	Redevelopment	All five buildings found National Register eligible
CP30	Stephens Hall ^b	Redevelopment	National Register eligible
CE13	Unit 3	Redevelopment	Local Landmark eligible
CP-h	Old Art Gallery	Renovation	National Register eligible
CP-o	Zellerbach Hall	Renovation	National Register eligible
HW-c	Stern Hall	Renovation	National Register eligible
CE-1	Smyth-Fernwald (includes Batchelder/Smyth House)	Renovation	California Register eligible

Notes.

a. Site IDs are shown on Figure 3-3, Potential Areas of New Development and Redevelopment, and Figure 3-4, Potential Areas of Renovation, in Chapter 3, Project Description, of this Draft EIR.

b. These potential areas of redevelopment could also include additions and/or renovations.

Sources: Architectural Resources Group, November 2020. Historical Resources Technical Report, Long Range Development Plan Update, University of California, Berkeley; Page & Turnbull, 2020, Old Art Gallery, University of California, Berkeley, Historic Resource Evaluation.

TABLE 5.4-10 POTENTIALLY ELIGIBLE RESOURCES IDENTIFIED AS POTENTIAL REDEVELOPMENT OR RENOVATION PROJECTS

Site ID ^a	Name	Project Type	Historic Status
CP7	Bechtel Addition ^b	Redevelopment	Likely eligible
CP12	Davis Hall	Redevelopment	Likely eligible
CP20	Hesse/O'Brien Halls	Redevelopment	Hesse: Potentially eligible O'Brien: Not eligible
CP22	Anthropology and Art Practice	Redevelopment	Potentially eligible
CP23	Lewis Hall ^b	Redevelopment	Likely eligible
CP26	Morgan Hall	Redevelopment	Potentially eligible
CP32	Barker Hall	Redevelopment	Potentially eligible
CE4	2111 Bancroft Way	Redevelopment	Potentially eligible
CE8	Channing/Bowditch	Redevelopment	2334 Bowditch: Not eligible 2515 Channing Way: City of Berkeley Structure of Merit Other addresses: Not evaluated
CP-l	Sproul Hall	Renovation	Likely eligible
CE-a	Etcheverry Hall	Renovation	Likely eligible
HW-a	Haas Clubhouse	Renovation	Likely eligible

Notes.

a. Site IDs are shown on Figure 3-3, Potential Areas of New Development and Redevelopment, and Figure 3-4, Potential Areas of Renovation, in Chapter 3, Project Description, of this Draft EIR.

b. These potential areas of redevelopment could also include additions and/or renovations.

Source: Architectural Resources Group, November 2020. Historical Resources Technical Report, Long Range Development Plan Update, University of California, Berkeley

Potential future development projects identified in Chapter 3, as well as other sites that have not yet been identified, under the proposed LRDP Update could have the potential to materially and adversely alter the

physical characteristics that convey the significance of one or more historical resources. Material alteration could result from demolition of a historic resource; remodel of a historic resource in a manner not in conformance with the Secretary of the Interior's Standards for Rehabilitation, compromising the integrity of the resource; new construction in the vicinity of a historical resource that would compromise that resource's integrity of setting through incompatible design; and demolition, excavation, and/or construction activity that could damage historical resources in the vicinity through ground vibration or soil movement under or adjacent to the existing foundation of a historical resource or through inadvertent contact with building materials or machinery.

The proposed LRDP Update includes several Historic Resource objectives in the Land Use element that prioritize the UC Berkeley campus's historic resources, including:

- Steward historic resources while addressing long-term program needs in support of UC Berkeley's mission. To the extent possible, apply the Secretary of the Interior's Standards for the Treatment of Historic Properties to historically significant elements when making building improvements, and integrate flexibility into potential projects to allow buildings to adapt to uses that may evolve over time.
- Apply best practices when modifications are planned for buildings or landscapes that are listed on the National Register of Historic Places or that are eligible for listing. For modifications to historic resources, utilize the Secretary of the Interior's Standards for the Treatment of Historic Properties. Continue to prepare historic resource evaluations as needed for appropriate buildings and landscapes, including buildings that will be fifty or more years old by the LRDP EIR horizon year of 2036-2037.
- Reinforce and complement the physical organization of the Campus Park and other university properties. Maintain and enhance historic buildings, landscapes, and site features associated with the historic Frederick Law Olmsted and John Galen Howard plans for the campus and with the Strawberry Creek corridor, to the extent possible. Consider the integrity of significant building and landscape ensembles when siting and designing new projects.

Potential future development under the proposed LRDP Update would be required to incorporate CBPs. The applicable CBPs will depend on the project type, the historic status of the impacted resources, and whether there are historical resources in the project vicinity that could be affected by demolition, excavation, and/or construction activity.

As part of the proposed project, UC Berkeley and future development projects would implement the aesthetics (AES) CBP listed here, which has been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP AES-4 (Updated):** UC Berkeley will make informational presentations of major projects in the city environs of the Cities of Berkeley and Oakland, and the Clark Kerr Campus, to the relevant city commission(s) and board(s). Relevant commissions and boards, to be determined jointly by the Campus Architect and appropriate City Planning Director, may include the Berkeley Zoning Adjustments Board, and Berkeley Landmarks Preservation Commission. Major projects in the Hill Campus East within the city of Oakland may also be presented to relevant City of Oakland boards or commissions, after consultation and mutual agreement between those agencies and UC Berkeley. Major projects may include new construction or redevelopment projects with substantial community interest as determined by UC Berkeley. Whenever a major project in the city environs or Clark Kerr Campus is

under consideration, the Campus Architect may invite the appropriate city planning director or their designee to attend and comment on the project at the UC Berkeley Design Review Committee.

CBP AES-4 would encourage collaboration with local agencies and would serve to reduce potential impacts to historic resources. The ongoing implementation of CBP AES-4, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts to historic resources. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

Though implementation of CBP AES-4 would reduce impacts to historic resources, because project-specific details of potential future development are unknown at the program level and because the status of historic resources changes over time, impacts to historic resources would be *significant*.

Impact CUL-1.1: Future development under the proposed LRDP Update has the potential to permanently impact historic resources by demolishing or renovating historic buildings in a manner that is not in conformance with the Secretary of the Interior's Standards for Rehabilitation.

Mitigation Measure CUL-1.1a: If a project could cause a substantial adverse change in features that convey the significance of a historical resource that is designated or has been found eligible or potentially eligible for designation, or has not been evaluated but is more than 45 years of age, UC Berkeley shall engage the services of a professional meeting the Secretary of the Interior's Professional Qualification Standards in Architectural History to complete a historic resource assessment, overseen by the UC Berkeley Physical & Environmental Planning Office. The assessment shall provide background information on the history and development of the resource and, in particular, shall evaluate whether the resource appears to be eligible for National Register, California Register, or local landmark listing. The assessment shall also evaluate whether the proposed treatment of the historical resource is in conformance with the Secretary of the Interior's Standards for Rehabilitation (the Standards). If the proposed project is found to not be in conformance with the Standards, this assessment shall include recommendations for how to modify the project design so as to bring it into conformance. The Campus Architect shall verify compliance with this measure prior to the initiation of any site or building demolition or construction activities.

Mitigation Measure CUL-1.1b: For projects that would cause a substantial adverse change in features that convey the significance of a historical resource that is designated or has been found eligible for designation, UC Berkeley shall have Historic American Building Survey Level II documentation completed for the historical resource and its setting. To ensure public access, UC Berkeley shall submit copies of the documentation to UC Berkeley's Bancroft Library and Environmental Design Archives, Berkeley Architectural Heritage Association, the Berkeley Historical Society, and the California Historical Resources Information System Northwest Information Center. This documentation shall include drawings, photographs, and a historical narrative:

- **Drawings:** Existing historic drawings of the historical resource, if available, will be photographed with large-format negatives or photographically reproduced on Mylar. In the absence of existing drawings, full-measured drawings of the building's plan and exterior elevations shall be prepared prior to demolition.

- **Photographs:** Photo-documentation of the historical resource will be prepared to Historic American Building Survey standards for archival photography, prior to demolition. Historic American Building Survey standards require large-format black-and-white photography, with the original negatives having a minimum size of four inches by five inches. Digital photography, roll film, film packs, and electronic manipulation of images are not acceptable. All film prints, a minimum of four inches by five inches, must be hand-processed according to the manufacturer's specifications and printed on fiber-base, single-weight paper and dried to a full gloss finish. A minimum of 12 photographs shall be taken, detailing the site, building exterior, building interior, and character-defining features. Photographs must be identified and labeled using Historic American Building Survey standards.
- **Historical Overview:** A professional meeting the Secretary of the Interior's Professional Qualification Standards in Architectural History or History shall assemble historical background information relevant to the historical resource.

The Campus Architect shall verify compliance with this mitigation measure prior to the initiation of any site or building demolition or construction activities.

Mitigation Measure CUL-1.1c: Based on Mitigation Measure CUL-1.1b, if any project could result in alteration of features of a historical resource that are character-defining or convey the significance of a resource, UC Berkeley shall give local historical societies or local architectural salvage companies the opportunity to salvage character-defining or significant features from the historical resource for public information or reuse in other locations. UC Berkeley shall contact local historical societies and architectural salvage companies and notify them of the available resources and make them available for removal. If, after 30 days, no organization is able and willing to salvage the significant materials, demolition can proceed. The Campus Architect shall verify compliance with this measure prior to the initiation of any demolition activities that could affect the resources.

Mitigation Measure CUL-1.1d: For projects that would result in demolition of historic resources, prior to demolition the UC Berkeley Campus Architect shall determine which resources merit on-site interpretation, with consideration of available historic resource assessments and other relevant materials. For historic resources that will be demolished that the UC Berkeley Campus Architect has determined to be culturally significant, UC Berkeley shall incorporate an exhibit or display of the resource and a description of its historical significance into a publicly accessible portion of any subsequent development on the site. The display shall be developed with the assistance of the Campus Architect and one or more professionals experienced in creating such historical exhibits or displays.

Mitigation Measure CUL-1.1e: Implement Mitigation Measure NOI-2.

Significance with Mitigation: Significant and unavoidable. Implementation of Mitigation Measures CUL-1.1a through CUL-1.1d, and Mitigation Measure NOI-2, as well as CBP AES-4 would reduce potential impacts to historic resources. As discussed in Chapter 5.11, Noise, the implementation of Mitigation Measure NOI-2 would reduce construction vibration impacts to historic buildings and resources to a less-than-significant level. This noise mitigation measure would require future development projects to incorporate alternative methods to vibration-intensive construction activities and, where such alternatives are not feasible, to conduct surveys and vibration monitoring to ensure that construction

vibration levels do not exceed established thresholds. However, due to the programmatic nature of the proposed LRDP Update, future projects could still result in the demolition of one or more historical resources and/or remodeling of one or more historical resources in a manner not in conformance with the Secretary of the Interior's Standards for Rehabilitation, and those impacts remain significant. The identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects that meet applicable thresholds of significance. However, due to the programmatic nature of the proposed LRDP Update, no mitigation measures are available, and the impact is considered *significant and unavoidable*.

Housing Project #1

A Historical Resources Technical Report was prepared for the proposed project by Architectural Resources Group (see Appendix F.2, Housing Project #1 Cultural Resources Data).²⁴ This discussion is based on the conclusions in that report and considers potential impacts related to the removal of the University Garage (1952 Oxford Street), an identified historic resource; potential impacts to nearby historic resources from the construction of Housing Project #1; and potential impacts to the setting of nearby historic resources related to the design of Housing Project #1.

Demolition

Housing Project #1 would involve demolition of all five buildings currently on-site. Though four of the buildings are not considered historic resources for the purposes of CEQA, the University Garage is a City of Berkeley Landmark and eligible for listing in the California Register. Demolition would result in a *significant* impact to a historic resource.

Impact CUL-1.2: Housing Project #1 would demolish the University Garage (1952 Oxford Street), a designated City of Berkeley Historical Landmark and eligible for listing in the California Register, which would result in a substantial adverse change to a historic resource.

Mitigation Measure CUL-1.2a: Implement Mitigation Measure CUL-1.1b.

Mitigation Measure CUL-1.2b: Implement Mitigation Measure CUL-1.1d.

Significance with Mitigation: Significant and unavoidable. Mitigation Measure CUL-1a is not required because an historical resources technical report was prepared for Housing Project #1 as part of this Draft EIR. Housing Project #1 would be required to comply with Mitigation Measure CUL-1.1b, which requires the preparation and submittal of Historic American Building Survey Level II documentation, and Mitigation Measure CUL-1.1d, which requires on-site interpretation by installing an exhibit or display of University Garage and a description of its historical significance in a publicly accessible portion of the project site. Though the 2018 joint historical assessment completed by Knapp Architects for the University Garage identified the building's character-defining features—including its clay tile roofs,

²⁴ Historical Resources Technical Report Housing Project #1 (Helen Diller Anchor House) prepared in November 2020 by Architectural Resources Group, Inc.

Moorish arched openings, brick construction, and skylights²⁵—it was determined that due to the type and quality of the building materials, it would not be feasible to salvage them. Accordingly, since it is not feasible to salvage these materials, compliance with Mitigation Measure CUL-1.1d requiring the salvaging of character defining materials when feasible is not required. Though these mitigation measures would reduce impacts from the demolition of the University Garage, the proposed Housing Project #1 would still result in permanent removal of the University Garage, and therefore impacts would remain *significant and unavoidable*.

Construction (Vibration Damage)

Construction activities can cause substantial adverse change in the significance of historical resources in the immediate vicinity of the site because demolition, excavation, and other construction activities could result in substantial ground vibration or soil movement under or adjacent to the foundation of a historical resource. Construction impacts typically consist of destabilization associated with groundborne vibration in the vicinity of a historic building, or destabilization associated with demolition or new construction directly abutting a historic building. As discussed in Chapter 5.11, Noise, there are no historic buildings or structures within the screening distance for building damage shown in Mitigation Measure NOI-2 that would be subject to vibration damage as a result of construction of the proposed project. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Design

A substantial adverse change in the significance of a historical resource in the vicinity of Housing Project #1 could occur if aspects of Housing Project #1's design were sufficiently incompatible with one or more nearby historic resources that the new design would compromise those resources' integrity of setting. As described in Section 5.4.1.2, Environmental Setting, there are four historical resources, all City of Berkeley Landmarks, within the immediate vicinity of the project site: Acheson Physicians' Building at 2131 University Avenue; Ernest A. Heron Building at 2136 to 2140 University Avenue; S.J. Sill & Co. Grocery & Hardware Store at 2145 University Avenue; and Martha E. Sell Building at 2154 to 2160 University Avenue. Previous evaluation found that these four properties are eligible as contributors to the Proposed Shattuck Avenue Downtown Historic District. However, as of July 2020, the 2131 and 2145 University Avenue buildings were undergoing substantial modifications that will incorporate their façades into the Modera Acheson Commons apartment complex, with a new six-story building constructed behind the one-story remnant façade of 1245 University Avenue.

In addition, the proposed design of Housing Project #1 is compatible with its surroundings because its design principles have much in common with early 20th-century commercial architecture in the vicinity. For example, the building façades are articulated to distinguish a building base, middle, and top, with brick cladding and an articulated brick cornice at the base and middle. The exposed colonnade at the corner

²⁵ Knapp Architects, 2018. 1952 Oxford Street and 1925 Walnut Street, Historical Assessment.

terraces and central balconies on the east and west façades are reminiscent of classical architecture. The building footprint extends to the lot line in keeping with minimal setbacks common to nearby properties. Long spans of uninterrupted glazing are avoided through the use of arrays of square, four-light windows, and the slightly inset window openings replicates the appearance of punched window openings. Aluminum sunshades extend over paired windows to add surface depth, storefronts are set within strongly demarcated building bays, and recessed central entry bays on the east and west façades break up the massing of the building's two main façades.

These are all features common in 20th-century commercial architecture and compatible with the composition and materials of nearby historical resources, including those that contribute to the proposed Shattuck Avenue Downtown Historic District. (Contributors to this proposed district include a wide range of late 19th- and early 20th-century architectural styles for commercial buildings.) Therefore, the proposed design of Housing Project #1 is not incompatible with nearby historic resources such that the integrity of the setting of neighboring resources would be adversely impacted by Housing Project #1. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

A Historical Resources Technical Report was prepared for the proposed Housing Project #2 by Architectural Resources Group (see Appendix F.3, Housing Project #2 Cultural Resources Data).²⁶ This discussion is based on the conclusions in this report and considers potential impacts to the setting of nearby historic resources related to the design of Housing Project #2; potential impacts related to the construction of Housing Project #2; and potential impacts related to the loss of People's Park, an identified historic resource.

Demolition

Housing Project #2 would require demolition of existing structures, which currently include a public restroom, basketball courts, and stage, and would reconfigure the existing open space. An effort would be made to preserve significant trees in good condition in place where possible, but trees in poor health or in the way of building construction would be removed. These proposed changes would leave the park without integrity of design, materials, workmanship, feeling, or association, that is, it would remove its ability to convey its historic significance. Therefore, demolition of the site would result in a *significant* impact.

Impact CUL-1.3: Housing Project #2 would demolish and reconfigure People's Park, a designated City of Berkeley Historical Landmark, which would result in a substantial adverse change to a historic resource.

Mitigation Measure CUL-1.3a: Implement Mitigation Measure CUL-1.1b.

²⁶ *Historical Resources Technical Report Housing Project #1 (Helen Diller Anchor House)* prepared in November 2020 by Architectural Resources Group, Inc.

Mitigation Measure CUL-1.3b: Implement Mitigation Measure CUL-1.1d.

Significance with Mitigation: Significant and unavoidable. Mitigation Measure CUL-1a is not required because an historical resources technical report was prepared for Housing Project #2 as part of this Draft EIR. Housing Project #2 would be required to comply with Mitigation Measure CUL-1.1b, which requires the preparation and submittal of Historic American Building Survey Level II documentation, and Mitigation Measure CUL-1.1d, which requires on-site interpretation by installing an exhibit or display of People's Park and a description of its historical significance in a publicly accessible portion of the project site. Even though the Historical Resources Technical Report for the site found that there were character-defining features that convey the site's historic significance, these features cannot be feasibly salvaged. Accordingly, since it is not feasible to salvage these materials, compliance with Mitigation Measure CUL-1.1d requiring the salvaging of character defining materials when feasible is not required. These mitigation measures would reduce impacts from the demolition and redevelopment of the site, but the proposed Housing Project #2 would still result in the site's permanent and significant alteration, and impacts would remain *significant and unavoidable*.

Construction (Vibration Damage)

As discussed above for Housing Project #1, construction impacts typically consist of destabilization associated with groundborne vibration in the vicinity of a historic building or destabilization associated with demolition or new construction directly abutting a historic building. Only destabilization due to groundborne vibration in the vicinity of a historic building would apply for Housing Project #2. As discussed in Chapter 5.11, Noise, because pile driving is proposed, groundborne vibrations associated with project construction could result in excessive groundborne vibration at nearby historic buildings and could be strong enough to destabilize any historical resource in the project vicinity. As described in Chapter 5.11, Noise, in impact discussion NOI-2 for Housing Project #2, implementation of Mitigation Measure NOI-2 is required to determine if an alternative to pile driving is available for the project that would eliminate the impact. If such an alternative is not available, a vibration monitoring program would be prepared that is specific to monitoring vibration impacts to historic buildings. As demonstrated in impact discussion NOI-2, construction vibration impacts to nearby historic buildings, including the Anna Head Alumnae Hall and residences to the north; the Vedanta Society and the First Church of Christ, Scientist to the east; and the First Baptist Church to the south, would be less than significant. Therefore, without implementation Mitigation Measure NOI-2, impacts to the nearby historic buildings would be *potentially significant*.

Impact CUL-1.4: The proposed use of pile driving during construction of Housing Project #2 could produce significant ground vibration or soil movement under or adjacent to the existing foundations of nearby historical resources, compromising their structural integrity.

Mitigation Measure CUL-1.4: Implement Mitigation Measure CUL-1.1e.

Significance with Mitigation: Less than significant.

Design

The design of Housing Project #2 could cause a substantial adverse change in the significance of any historical resource within its vicinity if aspects of the project design were sufficiently incompatible with one or more nearby historic resources that the new project would compromise those resources' integrity of setting. As discussed above, there are 10 historical resources in the immediate vicinity of the Housing Project #2 site. These resources consist of late 19th- and early 20th-century buildings that are two to four stories in height. Though the exterior appearances of the Housing Project #2 student and affordable and supportive housing buildings are not yet known, the height of the student housing building, at a maximum height of 17 stories above ground, is much higher than the nearby historic resources. Therefore, the design may not be in keeping with Secretary of the Interior Rehabilitation Standard 9, which states that "New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment."²⁷ UC Berkeley will make informational presentations regarding Housing Project #2 to the relevant City of Berkeley commission(s) and board(s) and, if relevant, the Berkeley Landmarks Preservation Commission for review by the UC Berkeley Design Review Committee, in line with CBP AES-4 and to assess compatibility with the historic resources surrounding the Housing Project #2 site. However, because the student housing building would have a much greater height and larger footprint than any of the nearby historical resources, its scale and proportion would likely not be compatible with those resources. Therefore, impacts would be *significant*.

Impact CUL-1.5: The design of Housing Project #2 may impair the integrity of one or more of the 10 historical resources in the immediate vicinity of People's Park through incompatible design.

Mitigation Measure CUL-1.5: Prior to approval of final design plans for Housing Project #2, UC Berkeley shall retain an architect meeting the National Park Service Professional Qualifications Standards for historic architecture to review plans for the proposed student housing and affordable and supportive housing buildings. The historic architect shall provide input and refinements to the design team regarding fenestration patterns, entry design, and the palette of exterior materials to improve compatibility with neighboring historical resources and to enhance compliance with the Secretary of the Interior's Standards and the City of Berkeley Southside Design Guidelines.

Significance with Mitigation: Significant and unavoidable. Though Mitigation Measure CUL-1.4 would reduce impacts to nearby historical resources, the scale and proportion of the Housing Project #2 as proposed would likely not be compatible with those resources, and impacts would remain *significant and unavoidable*.

²⁷ W. B. Morton, Anne E. Grimmer, Kay D. Weeks, 1992. *The Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines for Rehabilitating Historic Buildings*. Washington, D.C.: U.S. Department of the Interior, National Park Service, Cultural Resources, Preservation Assistance Division.

CUL-2	The proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.
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LRDP Update

Archaeological deposits that meet the definition of a historical resource under CEQA Section 21084.1 or CEQA Guidelines Section 15064.5 could be present within the EIR Study Area and could be damaged or destroyed by ground-disturbing construction activities—such as site preparation, grading, excavation, or trenching for utilities—for potential future development under the proposed LRDP Update. Should this occur, the ability of the deposits to convey their significance, either as containing information about prehistory or history, or as possessing traditional or cultural significance to Native American or other descendant communities, would be materially impaired.

As discussed in Section 5.4.1.2, Existing Conditions, 11 prehistoric archaeological sites have been documented within and around (within 0.5 miles) of the EIR Study Area. Since UC Berkeley has not conducted a comprehensive and systematic survey for archaeological resources throughout the entire EIR Study Area, there could be not-yet-identified archaeological resources in the EIR Study Area. In particular, the Campus Park is characterized as the most likely zone of the EIR Study Area for potential archaeological sites.

As shown on Figure 3-3, Potential Areas of New Development and Redevelopment, potential future development would occur on a limited number of vacant parcels and in the form of infill/intensification on sites either already developed and/or underutilized, and/or in close proximity to existing development where the likelihood of unearthing an archaeological resource is less (compared to an undeveloped site). Accordingly, while it is not likely that potential future development would unearth unknown archaeological resources on many of the identified sites for development, some future projects could likely result in substantial excavation at significant depths below the ground surface where no such excavation has previously occurred. Such excavation activities could disturb unidentified subsurface materials that have the potential to contain archaeological resources. Pursuant to the UC Berkeley Campus Design Standards described in Section 5.4.1.1, Regulatory Framework, in the event that artifacts are discovered during construction activities, the project contractor shall protect the discovered items, cease work within a 35-foot radius, and notify the owner's representative in writing. The owner may retain an archaeological consultant to evaluate findings in accordance with standard practice and applicable regulations. Artifact recovery, if deemed appropriate, would be conducted. However, for projects where the likelihood of discovery is greater either due to location or the size of the project, impacts would be considered potentially *significant*.

Impact CUL-2: The proposed project has the potential to disturb unknown archaeological resources that could exist beneath the depth of previous ground disturbances and result in a significant impact to an archaeological resource.

Mitigation Measure CUL-2: For construction projects that include substantial ground-disturbing activities (including, but not limited to, soil removal, parcel grading, new utility trenching, and

foundation-related excavation), UC Berkeley shall implement the following steps to ensure impacts to archaeological resources will be less than significant.

- **All Projects with Ground-Disturbing Activities.**
 - Prior to soil disturbance, UC Berkeley shall confirm that contractors have been notified of the procedures for the identification of federal- or State-eligible cultural resources, and that the construction crews are aware of the potential for previously undiscovered archaeological resources or tribal cultural resources on site, of the laws protecting these resources and associated penalties, and of the procedures to follow should they discover cultural resources during project-related work.
 - If a resource is discovered during construction (whether or not an archaeologist is present), the following measures shall be implemented:
 - All soil disturbing work within 35 feet of the find shall cease.
 - UC Berkeley shall contact a qualified archaeologist to provide and implement a plan for survey, subsurface investigation as needed to define the deposit, and assessment of the remainder of the site within the project area to determine whether the resource is significant and would be affected by the project.
 - Any previously undiscovered resources found during construction activities shall be recorded on appropriate California Department of Parks and Recreation forms and evaluated for significance in terms of the California Environmental Quality Act (CEQA) criteria by a qualified archaeologist.
 - If the resource is a tribal cultural resource, the consulting archaeologist shall consult with the appropriate tribe to evaluate the significance of the resource and to recommend appropriate and feasible avoidance, testing, preservation or mitigation measures, in light of factors such as the significance of the find, proposed project design, costs, and other considerations.
 - If avoidance is infeasible, other appropriate measures (e.g., data recovery) may be implemented.
 - If the resource is a non-tribal resource determined significant under CEQA, the qualified archaeologist shall prepare and implement a research design and archaeological data recovery plan that will capture those categories of data for which the site is significant.
 - The archaeologist shall also perform appropriate technical analyses; prepare a comprehensive report complete with methods, results, and recommendations; and provide for the permanent curation of the recovered resources if appropriate.
 - The report shall be submitted to the relevant city (if it falls under Berkeley or Oakland boundaries), California Historic Resources Information System Northwest Information Center, and the State Historic Preservation Office, if required.
- **Areas with High Archaeological Sensitivity.** In addition to the requirements above for all construction projects with ground-disturbing activities, for project in areas with moderately high to extreme archaeological sensitivity (as shown on the confidential Figure 11, Prehistoric Cultural Sensitivity Overlay Analysis Results, prepared for the 2021 LRDP Update EIR) ground disturbance activities shall be monitored. Monitoring shall occur for soil removal, parcel grading, new utility trenching, and foundation-related excavation in those areas that extend into previously undisturbed soils. Archaeological monitoring must be undertaken by a qualified archaeologist or the

appropriate tribe, if the resources are tribal, who is familiar with a wide range of prehistoric archaeological or tribal remains: artifact identification, human and faunal bone, soil descriptions, and interpretation. Based on project-specific daily construction schedules, field conditions, and archaeological observations, full-time monitoring may not be warranted following initial observations.

- **Sites with Known Archaeological Resources.** In the event the disturbance of a site with known archaeological or tribal cultural resources cannot be avoided, in addition to the requirements above for all construction projects with ground-disturbing activities, for project sites with known on-site archaeological or tribal cultural resources, the following additional actions shall be implemented prior to ground disturbance:
 - UC Berkeley will retain a qualified archaeologist to conduct a subsurface investigation of the project site, and to ascertain the extent of the deposit of any buried archaeological materials relative to the project's area of potential effects. The archaeologist shall prepare a site record and file it with the California Historical Resource Information System.
 - If the resource extends into the project's area of potential effects, the resource shall be evaluated by a qualified archaeologist. UC Berkeley shall consider this evaluation in determining whether the resource qualifies as a historical resource or a unique archaeological resource under the criteria of California Environmental Quality Act (CEQA) Guidelines Section 15064.5.
 - If the resource does not qualify, no further mitigation is required unless there is a discovery of additional resources during construction (as required above for all construction projects with ground-disturbing activities).
 - If a resource is determined to qualify as an historical resource or a unique archaeological resource in accordance with CEQA, UC Berkeley shall consult with a qualified archaeologist to mitigate the effect through data recovery if appropriate to the resource or, if data recovery is infeasible, to consider means of avoiding or reducing ground disturbance within the site boundaries, including where and if feasible, minor modifications of building footprint, landscape modification, the placement of protective fill, the establishment of a preservation easement, or other means that would permit avoidance or substantial preservation in place of the resource. A written report of the results of investigations shall be prepared by a qualified archaeologist and filed with the University Archives/ Bancroft Library and the California Historic Resources Information System Northwest Information Center.

Significance with Mitigation: Less than significant.

Housing Project #1

As described above under Section 5.4.1.2, Existing Conditions, the soils beneath the surface of the Housing Project #1 site should be considered sensitive for potentially significant prehistoric-era archaeological resources to a maximum depth of 19 feet. While archaeological resources have not been found on site, the potential for unknown archaeological resources to be disturbed during construction activities remains, and impacts would therefore be *significant*.

Impact: Same as Impact CUL-2.

Mitigation Measure: Same as Mitigation Measure CUL-2.

Significance with Mitigation: Less than significant.

Housing Project #2

As described above under Section 5.4.1.2, Existing Conditions, the Housing Project #2 site is sensitive for prehistoric-era archaeological resources due to the fact that the historic alignment of a tributary of Derby Creek may have passed through the site. In addition, the site is also sensitive for historic-era archaeological resources because it was the original land parcel of the 2529 Dwight Way dwelling, which was located toward what is now the center of the project site, and it is moderately to highly sensitive for prehistoric cultural resources throughout the site to a depth of 12 feet below surface due to past development across the site. Significant ground disturbance from past developments is unlikely because, based on past records, the early 20th-century homes may have had crawl space foundations, but not basements, meaning that the depth of initial ground disturbance from construction, while unknown, is likely to have been no more than a few feet, and the Housing Project #2 site appears to have had little topographical variation. In addition, site modifications over time have included shallow ground disturbance associated with demolition of early properties, trenching for utilities, and gardening. It is not anticipated that there was deep soil disturbance on-site.

However, there are no previously identified prehistoric sites within or in close proximity to the site. Therefore, if any unknown archaeological resources are present on-site, they would be buried below the depth of previous disturbances, past the first feet below ground surface. The maximum anticipated depth of potential archaeological deposits is estimated at approximately 12 feet below ground surface. As the potential remains, impacts to archaeological resources would be *significant*.

Impact: Same as Impact CUL-2.

Mitigation Measure: Same as Mitigation Measure CUL-2.

Significance with Mitigation: Less than significant.

CUL-3	The project would not disturb any human remains, including those interred outside of dedicated cemeteries.
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LRDP Update

Human remains associated with precontact archaeological deposits could exist in the EIR Study Area and could be encountered at the time potential future development occurs, in particular where potential future projects could result in substantial excavation at significant depths where no such excavation has previously occurred. The associated ground-disturbing activities, such as site grading and trenching for utilities, have the potential to disturb human remains interred outside of formal cemeteries. Any human remains encountered during ground-disturbing activities would be required to be treated in accordance with California Health and Safety Code Section 7050.5, Public Resources Code Section 5097.98, and the

California Code of Regulations Section 15064.5(e) (CEQA), which state the mandated procedures of conduct following the discovery of human remains.

As part of the proposed project, UC Berkeley and future development projects would implement the following cultural resource (CUL) CBP, which has been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

CBP CUL-1 (Updated): UC Berkeley will follow the procedures of conduct following the discovery of human remains that have been mandated by Health and Safety Code Section 7050.5, Public Resources Code Section 5097.98 and the California Code of Regulations Section 15064.5(e) (California Environmental Quality Act [CEQA]). According to the provisions in CEQA, if human remains are encountered at the site, all work in the immediate vicinity of the discovery shall cease and necessary steps to ensure the integrity of the immediate area shall be taken. The County Coroner shall be notified immediately. The Coroner shall then determine whether the remains are Native American. If the Coroner determines the remains are Native American, the Coroner shall notify the California Native American Heritage Commission (NAHC) within 24 hours, who will, in turn, notify the person the NAHC identifies as the Most Likely Descendant (MLD) of any human remains. Further actions shall be determined, in part, by the desires of the MLD. The MLD has 48 hours to make recommendations regarding the disposition of the remains following notification from the NAHC of the discovery. If the NAHC is unable to identify an MLD, the MLD fails to make a recommendation within 48 hours after being notified, or the landowner rejects the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to the landowner, the owner shall, with appropriate dignity, reinter the remains in an area of the property secure from further disturbance.

Because CBP CUL-1 would follow established procedures for minimizing impacts to human remains, the proposed LRDP Update would not result in impacts to human remains. The ongoing implementation of CBP CUL-1, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts associated with human remains. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

In addition, as described in Section 5.4.1.1, Regulatory Framework, the UC Berkeley Campus Design Standards include that in the event human remains are discovered during construction activities, the project contractor shall protect the discovered items, cease work within a 35-foot radius, and notify the owner's representative in writing. The owner may retain an archaeological consultant to evaluate findings in accordance with standard practice and applicable regulations. While descendant communities may ascribe religious or cultural significance to such remains and may view their disturbance as an immitigable impact, implementation of CBP CUL-1 and the UC Berkeley Campus Design Standards would ensure impacts to human remains are *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

As discussed above, any human remains encountered during ground-disturbing activities would be required to be treated in accordance with California Health and Safety Code Section 7050.5, Public Resources Code Section 5097.98, and the California Code of Regulations Section 15064.5(e) (CEQA), which state the mandated procedures following the discovery of human remains. UC Berkeley would implement CBP CUL-1, which would ensure impacts to human remains would *be less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

As discussed above, any human remains encountered during ground-disturbing activities would be required to be treated in accordance with California Health and Safety Code Section 7050.5, Public Resources Code Section 5097.98, and the California Code of Regulations Section 15064.5(e) (CEQA), which state the mandated procedures following the discovery of human remains. UC Berkeley would implement CBP CUL-1, which would ensure impacts to human remains would *be less than significant*.

Significance without Mitigation: Less than significant.

CUL-4	The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in significant cumulative impacts with respect to cultural resources.
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LRDP Update

The impacts of potential future development on cultural resources tend to be site specific, and cumulative impacts would occur when a series of actions leads to the loss of a substantial type of site, building, or resource. For example, though the loss of a single historic building may not be significant to the character of a neighborhood or streetscape, continued loss of such resources on a project-by-project basis could constitute a significant cumulative effect. This is most obvious in historic districts, where destruction or alteration of a percentage of the contributing elements may lead to a loss of integrity for the district overall. For example, changes to the setting or atmosphere of an area by adding modern structures on all sides of a historically significant building, thus altering the aesthetics of the streetscape, would create a significant impact. Destruction or relocation of historic buildings would also significantly impact the setting.

Existing policies and regulations described throughout this chapter serve to protect cultural resources in the EIR Study Area. For example, as described in Section 5.1.4.1, Regulatory Framework, PRC Section 5097.5 serves to protect archaeological and historical resources from removal or destruction; and the California Historic Building Code regulates how repairs, alterations, and other physical changes should be handled in order to preserve the significance of historic buildings. In addition, the UC Berkeley Campus Design Standards discussed under Section 5.4.1.1, Regulatory Framework, and the proposed LRDP Update objectives described under impact discussion CUL-1 would ensure that potential future development

considers and protects where possible the UC Berkeley campus's historic buildings and resources. Continued compliance with these regulations would decrease potential impacts to cultural resources.

As previously described, impacts to historic resources would also be reduced through the incorporation of CBP AES-4 (other agency collaboration) with and mitigation measures identified in impact discussions CUL-1 for historic buildings and structures. While implementation of this CBP and mitigation measure would reduce impacts overall, the proposed project would still result in significant and unavoidable impacts to historic resources.

Impacts to archaeological resources and human remains identified within the areas of potential development in the EIR Study Area would be mitigated to a less-than-significant level with implementation of Mitigation Measure CUL-2 (archaeological resources) and CBP CUL-1 (human remains). This mitigation measures and CBP would reduce impacts to individual resources. In addition, since the majority of the potential future development would occur on a limited number of vacant parcels and in the form of infill/intensification on sites either already developed and/or underutilized, and/or in close proximity to existing development, this reduces the likelihood of encountering potential archaeological resources or human remains on-site unless ground disturbance activities excavate to a greater extent than previously. However, the potential exists for previously unknown cultural resources to be encountered during ground-disturbing activities, and if encountered at multiple sites this could result in cumulative impacts as discussed above.

Cumulative projects are described in Chapter 5, Environmental Analysis, and include projects throughout Berkeley and Oakland. Similar to potential future development under the proposed LRDP Update, development from these projects could result in impacts to known or unknown cultural resources that may be on-site. The construction from cumulative development could involve partial or complete demolition of historical resources or involve ground disturbance below the level of previous ground disturbance that could result in the discovery of archaeological resources or human remains.

While the mitigation measures and CBPs described under impact discussions CUL-1, CUL-2, and CUL-3 would serve to reduce impacts to cultural resources overall, future development projects that implement the proposed LRDP Update, including Housing Project #1 and Housing Project #2, in combination with potentially significant impacts to cultural resources as part of the other development throughout Berkeley and Oakland, have the potential to result in *significant* cumulative impacts.

Impact CUL-4: The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in significant cumulative impacts with respect to cultural resources.

Mitigation Measure CUL-4: Implement Mitigation Measures CUL-1.1a through CUL-1.1e; CUL-1.2a and CUL-1b; CUL-1.3a and CUL-1.3b; CUL-1.4; CUL-1.5; and CUL-2.

Significance with Mitigation: Significant and unavoidable. Mitigation measures and CBPs described under impact discussions CUL-1, CUL-2, and CUL-3 would serve to reduce impacts to cultural resources overall, future development projects that implement the proposed LRDP Update, including Housing

Project #1 and Housing Project #2. No additional feasible mitigation measures are available to reduce this impact to a less-than-significant level.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. These impacts are incorporated into the cumulative impact analysis of the proposed LRDP Update. Housing Projects #1 and #2 would require implementation of a project-specific mitigation measures described in impact discussions CUL-1.1, CUL-1.2, and CUL-1.3 to reduce compatibility impacts with the historic resources, but this impact would remain significant and unavoidable.

Impact: Same as Impact CUL-4.

Mitigation Measure: Same as Mitigation Measure CUL-4.

Significance with Mitigation: Significant and unavoidable.

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5.5 ENERGY

This chapter describes the potential energy impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential energy impacts, and identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts. Energy modeling data are included in Appendix G, Energy Data, of this draft environmental impact report (Draft EIR).

5.5.1 ENVIRONMENTAL SETTING

Section 21100(b)(3) of the California Environmental Quality Act (CEQA) requires that an environmental impact report (EIR) include a detailed statement identifying mitigation measures proposed to minimize significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy. Appendix F, Energy Conservation, of the CEQA Guidelines states that, in order to ensure that energy implications are considered in project decisions, the potential energy implications of a project shall be considered in an EIR, to the extent relevant and applicable to the project. Appendix F further states that a project's energy consumption and proposed conservation measures may be addressed, as relevant and applicable, in the project description, environmental setting, and impact analysis portions of technical sections as well as through mitigation measures and alternatives.

In accordance with Appendix F, Energy Conservation, and Appendix G, Environmental Checklist Form, of the CEQA Guidelines, this Draft EIR includes relevant information and analyses that address the energy implications of the proposed LRDP Update and Housing Projects #1 and #2. This section summarizes the anticipated energy needs, impacts, and conservation measures of the proposed project. Information found herein, as well as other aspects of the energy implications of the proposed project, are discussed in greater detail elsewhere in this EIR, including Chapter 3, Project Description; Chapter 5.2, Air Quality; Chapter 5.7, Greenhouse Gas Emissions; and Chapter 5.15, Transportation.

5.5.1.1 REGULATORY FRAMEWORK

Federal, State, and local laws, regulations, plans, and/or guidelines related to energy that are applicable to the proposed project are summarized in this section.

Federal

Federal Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 was established in response to the 1973 oil crisis. The act created the Strategic Petroleum Reserve, established vehicle fuel economy standards, and prohibited the export of U.S. crude oil (with a few limited exceptions). It also created Corporate Average Fuel Economy

(CAFE) standards for passenger cars starting in model year 1978. The CAFE Standards are updated periodically to account for changes in vehicle technologies, driver behavior, and/or driving conditions.

The federal government issued new CAFE standards in 2012 for model years 2017 to 2025 that required a fleet average of 54.5 miles per gallon (MPG) for model year 2025. However, on March 30, 2020, the Environmental Protection Agency finalized an updated CAFE and greenhouse gas (GHG) emissions standards for passenger cars and light trucks and established new standards, covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021–2026. Under SAFE, the fuel economy standards will increase 1.5 percent per year compared to the 5 percent per year under the CAFE standards established in 2012. Overall, SAFE requires a fleet average of 40.4 MPG for model year 2026 vehicles.¹

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (Public Law 110-140) seeks to provide the nation with greater energy independence and security by increasing the production of clean renewable fuels; improving vehicle fuel economy; and increasing the efficiency of products, buildings, and vehicles. It also seeks to improve the energy performance of the federal government. The act sets increased CAFE standards; the Renewable Fuel Standard; appliance energy efficiency standards; building energy efficiency standards; and accelerated research and development tasks on renewable energy sources (e.g., solar energy, geothermal energy, and marine and hydrokinetic renewable energy technologies), carbon capture, and sequestration.²

State

Warren-Alquist Act

Established in 1974, the Warren-Alquist Act created the California Energy Commission (CEC) in response to the energy crisis of the early 1970s and the state's unsustainable growing demand for energy resources. The CEC's core responsibilities include advancing State energy policy, encouraging energy efficiency, certifying thermal power plants, investing in energy innovation, developing renewable energy, transforming transportation, and preparing for energy emergencies. The Warren-Alquist Act is updated annually to address current energy needs and issues, and its latest edition was in January 2020.

Renewables Portfolio Standard

The California Renewables Portfolio Standard (RPS) was established in 2002 under Senate Bill (SB) 1078 and was amended in 2006, 2011, and 2018. The RPS program required investor-owned utilities, electric service providers, and community choice aggregators to increase the use of eligible renewable energy resources to 33 percent of total procurement by 2020. The California Public Utilities Commission was

¹ The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks: Final Rule, Vol. 85 Federal Register, No. 84 (April 30, 2020).

² United States Environmental Protection Agency, 2019, May 6 (updated), Summary of the Energy Independence and Security Act Public Law 110-140 (2007). <https://www.epa.gov/laws-regulations/summary-energy-independence-and-security-act>.

required to provide quarterly progress reports on progress toward RPS goals. This accelerated the development of renewable energy projects throughout the state. Based on the third-quarter 2014 report, the three largest retail energy utilities provided an average of 20.9 percent of their supplies from renewable energy sources. Since 2003, 8,248 megawatts (MW) of renewable energy projects have started operations.³

Senate Bill 350

SB 350 (de Leon) was signed into law September 2015 and established tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

Senate Bill 100

On September 10, 2018 SB 100 was signed, replacing the SB 350 requirements. Under SB 100, the RPS for publicly owned facilities and retail sellers will consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the bill established an overall State policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Appliance Efficiency Regulations

California's Appliance Efficiency Regulations contain energy performance, energy design, water performance, and water design standards for appliances (including refrigerators, ice makers, vending machines, freezers, water heaters, fans, boilers, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings) that are sold or offered for sale in California (California Code of Regulations Title 20, Parts 1600–1608). These standards are updated regularly to allow consideration of new energy efficiency technologies and methods.⁴

Title 24, Part 6, Energy Efficiency Standards

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 and most recently revised in 2019 (California Code of Regulations Title 24, Part 6). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to

³ California Public Utilities Commission, 2016, Renewables Portfolio Standard Quarterly Report: 4th Quarter 2016. https://www.cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Utilities_and_Industries/Energy/Reports_and_White_Papers/Q4_2016_RPS_Report_to_the_Legislature_FINAL.pdf.

⁴ California Energy Commission, 2017, January, 2016 Appliance Efficiency Regulations. <https://www2.energy.ca.gov/2017publications/CEC-400-2017-002/CEC-400-2017-002.pdf>.

allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Building Energy Efficiency Standards, adopted on May 9, 2018, went into effect on January 1, 2020.

The 2019 standards were adopted to cut energy use in new homes by more than 50 percent and require installation of solar photovoltaic (PV) systems for single-family homes and multifamily buildings of three stories and less. The 2019 standards focus on four key areas: (1) smart residential PV systems; (2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); (3) residential and nonresidential ventilation requirements; (4) and nonresidential lighting requirements.⁵ Under the 2019 standards, nonresidential buildings will be 30 percent more energy efficient compared to the 2016 standards, and single-family homes will be 7 percent more energy efficient.⁶ When accounting for the electricity generated by the solar PV system, single-family homes would use 53 percent less energy than homes built to the 2016 standards.⁷

Title 24, Part 11, Green Building Standards

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (California Code of Regulations Title 24, Part 11, known as CALGreen) was adopted as part of the California Building Standards Code. It includes mandatory requirements for new residential and nonresidential buildings throughout California. CALGreen is intended to (1) reduce GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives of the governor. The mandatory provisions of CALGreen became effective January 1, 2011, and were last updated in 2019. The 2019 CALGreen update became effective on January 1, 2020.

Overall, CALGreen was established to reduce construction waste, make buildings more efficient in the use of materials and energy, and reduce environmental impacts during and after construction. CALGreen has requirements for construction site selection, stormwater control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, and site irrigation conservation, among others. CALGreen provides for design options, allowing the designer to determine how best to achieve compliance for a given site or building condition. It also requires building commissioning, which is a process for verifying that all building systems (e.g., heating and cooling equipment and lighting systems) are functioning at their maximum efficiency.⁸

⁵ California Energy Commission, 2018, News Release: Energy Commission Adopts Standards Requiring Solar Systems for New Homes, First in Nation. <https://www.energy.ca.gov/news/2018-05/energy-commission-adopts-standards-requiring-solar-systems-new-homes-first>.

⁶ California Energy Commission, 2018, 2019 Building Energy and Efficiency Standards Frequently Asked Questions. https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf.

⁷ California Energy Commission, 2018, 2019 Building Energy and Efficiency Standards Frequently Asked Questions. https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf.

⁸ California Building Standards Commission, 2019, 2019 California Code of Regulations Title 24, Part 11. <https://codes.iccsafe.org/content/CAGBSC2019/cover>.

Senate Bill 1389

SB 1389 (Public Resources Code Sections 25300–25323) requires the development of an integrated plan for electricity, natural gas, and transportation fuels. The CEC must adopt and transmit to the governor and legislature an integrated energy policy report every two years. The most recently completed report, the 2019 Integrated Energy Policy Report, addresses a variety of issues, including electricity sector trends; building decarbonization and energy efficiency; zero-emission vehicles; energy equity; climate change adaptation; electricity reliability in California; natural gas assessment; and electricity, natural gas, and transportation energy demand forecasts.⁹

Advanced Clean Car Program

Closely associated with fuel efficiency standards pursuant to AB 1493, the Advanced Clean Cars emissions-control program was approved by the California Air Resources Board (CARB) in 2012.¹⁰ The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles for model years 2015–2025.¹¹ The components of the Advanced Clean Cars program include the low-emission vehicle regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the zero-emission vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles in the 2018 through 2025 model years.¹²

Executive Order N-79-20

On September 23, 2020, Executive Order N-79-20 was issued, which sets a time frame for the transition to zero-emissions (ZE) passenger vehicles and trucks in addition to off-road equipment. It directs CARB to develop and propose the following:

- Passenger vehicle and truck regulations requiring increasing volumes of new ZEVs sold in the California toward the target of 100 percent of in-state sales by 2035.
- Medium- and heavy-duty vehicle regulations requiring increasing volumes of new ZE trucks and buses sold and operated in California toward the target of 100 percent of the fleet transitioning to ZEVs by 2045 everywhere feasible, and for all drayage trucks to be ZE by 2035.
- Strategies to achieve 100 percent zero emission from all off-road vehicles and equipment operations in California by 2035, in cooperation with other State agencies, the Environmental Protection Agency, and local air districts.

⁹ California Energy Commission, 2020, February, Final 2019 Integrated Energy Policy Report. <https://efiling.energy.ca.gov/getdocument.aspx?tn=232922>.

¹⁰ California Air Resources Board. 2020, January 6 (accessed). California's Advanced Clean Cars Program, www.arb.ca.gov/msprog/acc/acc.htm.

¹¹ California Air Resources Board. 2020, January 6 (accessed). California's Advanced Clean Cars Program, www.arb.ca.gov/msprog/acc/acc.htm.

¹² California Air Resources Board. 2020, January 6 (accessed). California's Advanced Clean Cars Program. www.arb.ca.gov/msprog/acc/acc.htm.

Senate Bill 375

In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excluding emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce vehicle miles traveled (VMT) and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations. The Metropolitan Transportation Commission is the metropolitan planning organization for the nine-county San Francisco Bay area.

University of California

University of California Office of the President

UC Sustainable Practices Policy (2020)

In 2003, the University of California Office of the President (UCOP) adopted a comprehensive policy of detailed guidelines for Green Building Design and Clean Energy Standards (now the UC Sustainable Practices Policy), including an annual sustainability reporting requirement. This policy has been revised several times, and the most recent version became effective in July 2020. It commits the UC to implementing actions intended to minimize its impacts on the environment and reduce dependence on nonrenewable energy. The UC Sustainable Practices Policy covers energy-related goals across various areas of sustainable practices, such as green building design, meeting silver and gold US Green Building Council Leadership in Energy and Environmental Design (LEED) ratings, clean energy, sustainable transportation, sustainable operations, zero waste, sustainable purchasing, and sustainable water systems. Policies across these various areas include the following (see Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling):¹³

- No new building or major renovation that is approved after June 30, 2019, shall use on-site fossil fuel combustion (e.g., natural gas) for space and water heating (except those projects connected to an existing UC Berkeley campus central thermal infrastructure). Projects unable to meet this requirement shall document the rationale for this decision.
- All new buildings will achieve a LEED “Silver” certification at a minimum. All new buildings will strive to achieve certification at a LEED “Gold” rating or higher, whenever possible within the constraints of program needs and standard budget parameters.

¹³ University of California Office of the President (UCOP). 2019. Sustainable Practices Policy under the Climate Protection. <https://policy.ucop.edu/doc/3100155/SustainablePractices>

University Carbon Neutrality Initiative (2013)

Former UC President Janet Napolitano introduced the University Carbon Neutrality Initiative (CNI) in 2013, which commits UC campuses to emitting net zero GHG emissions by 2025 from Scope 1 and 2 sources. In line with this initiative, UC Berkeley and other UC campuses have also committed to achieving net zero GHG emissions from all sources (including on-road mobile) by 2050. These goals require the UC system, including UC Berkeley, to aggressively improve energy efficiency in buildings, reduce emissions from UC campus fleets and other sources, and increase utilization of renewable energy sources.

UC Berkeley

Climate Action Plan (2009)

In the fall of 2007, UC Berkeley prepared its first climate action plan, 2007 Cal Climate Action Partnership Feasibility Study, to address the near-term requirement of the UC Sustainable Practices Policy for submittal of a climate action plan. In 2009 the UC Berkeley Office of Sustainability prepared the 2009 Climate Action Plan, which included an initial goal of reducing UC Berkeley campus emissions to 1990 levels by 2014, faster than required under AB 32. The 2009 Climate Action Plan also established the framework for carbon neutrality on the UC Berkeley campus by providing progressively lower emissions until climate neutrality is achieved.

UC Berkeley Carbon Neutrality Planning Framework (2016)

In 2016, UC Berkeley published the 2025 Carbon Neutrality Planning Framework, which discusses strategies to achieve the UC system's GHG reduction goals of net-zero Scope 1 and 2 emissions by 2025 and net-zero Scope 3 emissions by 2050. The 2025 goal translates to a total emissions reduction of approximately 80 percent below 2016 levels.¹⁴ UC Berkeley intends to maintain net zero Scope 1 and 2 emissions 2025 and beyond.

UC Berkeley Sustainability Plan (2020)

The UC Berkeley Sustainability Plan (2020 Sustainability Plan) is an update to UC Berkeley's Carbon Neutrality Planning Framework. The 2020 Sustainability Plan guides future work on the UC Berkeley campus to achieve UC Berkeley's carbon neutrality goals. The 2020 Sustainability Plan provides a clear structure to articulate the vision, goals, and corresponding strategies to become more sustainable and align with systemwide UC Sustainable Practices Policy. Table 5.5-1, UC Berkeley 2020 Sustainability Plan Goals, identifies the UC- and UC Berkeley-specific sustainability goals currently in place related to transitioning to renewable energy and increasing energy efficiency and conservation.

¹⁴ University of California Berkeley, 2016, 2025 Carbon Neutrality Planning Framework. Physical and Environmental Planning, Office of Sustainability and Energy.
https://sustainability.berkeley.edu/sites/default/files/uc_berkeley_2025carbonneutralityplanningframework_2016.pdf

TABLE 5.5-1 UC BERKELEY 2020 SUSTAINABILITY PLAN GOALS

UC System Goals		UC Berkeley Goals	
Efficiency and Clean Energy			
<ul style="list-style-type: none"> Reduce energy-use intensity of campus space by 2% annually Install additional on-site renewable electricity supplies and energy storage systems whenever cost-effective and/or supportive of the location's Climate Action Plan or other plan By 2025 at least 40% of the natural gas combusted on-campus will be offset by biogas procurement New equipment requiring liquid cooling will not use once-through or single-pass cooling systems 		<ul style="list-style-type: none"> By 2020 procure 100% clean electricity for eligible accounts By 2050 the campus will use only 100% clean, renewable energy Major modifications to an existing building will reduce the affected space's energy use by a minimum of 2%. Medium modifications will result in "No Net Increase" to energy use. Minor Modifications that impact building energy use will strive to achieve the "No Net Increase" energy goal 	
Transportation: Fleet			
<ul style="list-style-type: none"> By 2025, zero emission or hybrid vehicles will account for at least 50% of all new light duty vehicle acquisitions Carbon neutral from fleet by end of calendar year 2025 		<ul style="list-style-type: none"> By 2030 eliminate diesel use in fleet vehicles By 2022 replace the shuttle fleet, as feasible, with zero emission, sustainable fueled, non-diesel, or hybrid vehicles By 2030 all low-speed neighborhood vehicles (including non-licensed carts) will be all electric or zero-emission By 2022 increase E85 fuel use in existing gasoline/E85 flex-fuel vehicles 20% over 2018 baseline 	
Transportation: Commute			
<ul style="list-style-type: none"> By 2025, reduce the percentage of employees and students commuting alone in vehicles by 10% relative to 2015 Reduce SOV commute rate to no more than 40% of employees and no more than 30% of all employees and students by 2050. (In other words, 60% of employees and 70% of employees and students will use alternative commute modes) Promote purchases and support investment in alternative fuel infrastructure, and By 2025, strive to have at least 4.5% of commuter vehicles ZEV By 2050, strive to have at least 30% of commuter vehicles ZEV Carbon neutral from commute by 2050 or sooner 		<ul style="list-style-type: none"> Reduce employee drive alone rate to 36% by 2025 	
Transportation: Air Travel			
<ul style="list-style-type: none"> Carbon neutral from business air travel by 2050 or sooner 		<ul style="list-style-type: none"> Offset a portion of business air travel carbon emissions Reduce emissions from business air travel by 10% by 2025 	
Built and Natural Environment: Buildings			
<ul style="list-style-type: none"> All new buildings and major modifications will achieve a minimum of LEED Silver certification (see Berkeley accelerated goal). Renovations shall achieve a minimum LEED ID+C Certified All new buildings and major modifications will be designed and constructed to meet the whole-building energy performance targets or outperform the CBC energy-efficiency standards by at least 20% No new building or major modification off of the main campus energy system will use onsite fossil fuel combustion (e.g., natural gas) for space and water heating (see Berkeley accelerated goal) 		<ul style="list-style-type: none"> All new buildings and major modifications will achieve a minimum of LEED Gold certification All new buildings and major, medium and small modifications will maximize energy efficiency All new buildings and major modifications off of the main campus energy system will eliminate carbon emissions through no onsite fossil fuel combustion for space and water heating, laundry and cooking. By 2023, recommend a comprehensive sustainable built environment guidance 	

TABLE 5.5-1 UC BERKELEY 2020 SUSTAINABILITY PLAN GOALS

UC System Goals	UC Berkeley Goals
Built and Natural Environment: Water	
<ul style="list-style-type: none"> Reduce growth-adjusted potable water consumption 36% by 2025, compared to a three-year average baseline of FY2005/06, FY2006/07, and FY2007/08. Locations that achieve this target early are encouraged to set more stringent goals to further reduce potable water consumption Strive to reduce potable water used for irrigation by converting to recycled water, implementing efficient irrigation systems, drought-tolerant plantings, and turf removal Develop and maintain a Water Action Plan 	<ul style="list-style-type: none"> By 2022 produce a Sustainable Water Action Master Plan to include a menu of water saving and reuse recommendations and reduction goal targets to go beyond the UC goal By 2022 produce a Stormwater and Green Infrastructure Master Plan to identify best practices and catalyze multi-benefit projects Create learning and research opportunities and elevate water as a sustainability priority
Sustainable Services: Green Labs	
<ul style="list-style-type: none"> Implement an ongoing Green Lab Assessment Program supported by a department on campus to assess operational sustainability of research groups and the laboratories and other research spaces they use 	<ul style="list-style-type: none"> UC Berkeley Green Labs program will engage multiple partners in greener research and environmental stewardship within as many labs as possible. Key areas for improvements: engagement and green labs certification; procurement of greener consumables and equipment; energy and water efficiency; and waste reduction.

Source: UC Berkeley, 2020, November. Sustainability Plan.

UC Strategic Energy Plan, University of California, Berkeley (2008)

In February 2009, the UC Strategic Energy Plan was prepared for all UC campuses to fulfill a goal of the UC Sustainable Practices Policy to implement energy efficiency projects in existing buildings.¹⁵ The initial goal for the retrofit projects was to reduce systemwide, growth-adjusted energy consumption by 10 percent or more by 2014 from the year 2000 base consumption level. The UC Strategic Energy Plan analyzes energy use and GHG trends and identifies potential energy efficiency retrofit projects at all buildings over 50,000 square feet (primarily lighting, HVAC, commissions and central plant measures) for all UC campuses. Energy savings, GHG emissions savings, and financial returns are estimated for hundreds of projects, which are grouped into Tier 1 (committed projects to be completed over the next six years) and Tier 2 (additional planned projects) projects based on their savings and financial payback. The UC Strategic Energy Plan project list is intended to be regularly updated by each UC campus to evaluate the feasibility of additional energy-saving measures.

UC Berkeley Energy Policy (2020)

UC Berkeley has adopted a policy on energy use to ensure commitment to energy efficiency. The UC Berkeley Energy Use Policy creates requirements for campus departments and a specific framework to support energy and carbon-efficient decisions in accordance with the UC Sustainable Practices Policy, UC Berkeley LRDP, Campus Master Plan, and Climate Action Plan. Primary offices responsible for the

¹⁵ University Office of the President, 2008, UC Strategic Plan, University of California Berkeley, Final Report. Prepared by Newcomb Anderson McCormick, Inc. https://www.ucop.edu/sustainability/_files/energy/ucsep_ucb.pdf.

implementation of the UC Berkeley Energy Use Policy are the Energy Office, Building Department, Maintenance Operations of Facilities Services, and Capital Projects. The UC Berkeley Energy Use Policy outlines energy requirements and guidelines for:

- Existing Building Operations
- New Construction
- Large, Medium, and Small Renovations
- Clean Energy Supply
- Supply Chain Management and Information Technology
- Laboratories

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley campus built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects on the UC Berkeley campus integrate industry best practices and experience with existing UC Berkeley buildings, infrastructure, grounds, and maintenance issues. UC Berkeley's Campus Design Standards contains construction specifications to guide design and to ensure that new construction and renovation projects use CBPs and are integrated with the existing UC Berkeley campus. They are administered by the Campus Building Department and apply to all construction projects sponsored by UC Berkeley. The Campus Design Standards include requirements for building materials, lighting, glass and glazing, screening, planting, and others. They largely adopt and build off of other applicable regulations, such as the California Building Code (CBC). The Campus Design Standards are updated every three years to incorporate updates to the CBC.

Key sections of the Campus Design Standards relevant to energy include required compliance with Title 24, Part 6, California Energy Code, and with green building standards in the UC Sustainable Practices Policy, which provides guidance on the required sustainable energy systems (e.g., see Section 01 81 13).

In addition to the applicable UC policies, such as the UC Sustainable Practices Policy, the Campus Design Standards include the following requirements related to energy:

- The UC and UC Berkeley have sustainability policies and goals related to green building, energy efficiency, renewable energy supply, water, waste, procurement, food, transportation, land use, and academics and learning. Projects will need to comply with all applicable policies in the most recent version of the UC Sustainable Practices Policy.¹⁶ Additionally, UC Berkeley may have sustainable design policies that exceed the standards. Potential future projects will need to comply with applicable UC Berkeley specific guidelines as well.
- UC Berkeley requires full compliance with the most recent version of California Title 24, Part 6, California Energy Code, in regard to the design, construction, commissioning and acceptance testing, and full compliance with Title 20 in regard to appliances or lighting that might be installed or furnished as part of the scope of future development projects.

¹⁶ UC Policy on Sustainable Practices, <http://ucop.edu/sustainability/policyareas/index.html>, accessed December 2020.

- To enable incorporation of these sustainability requirements into the design and building of new and renovated facilities, consultation with the Facilities Services Energy Office, Office of Sustainability, and Office of Physical and Environmental Planning (or a sustainable design charrette, depending on the size of a potential future development project) will be required early in the design phase of projects to ensure incorporation of sustainable features.¹⁷

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to energy use and conservation as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.5.3, Impact Discussion.

5.5.1.2 EXISTING CONDITIONS

Energy infrastructure on the UC Berkeley campus consists of several interconnected systems: electricity and natural gas are provided by Pacific Gas and Electric Company (PG&E), and power to some sites is provided by East Bay Community Energy (EBCE) and the University of California wholesale power program; on-site PV arrays; in-building chillers; a cogeneration plant on the Campus Park producing steam and electricity that is powered by natural gas; and a steam plant on the Clark Kerr Campus.

Energy Providers

Pacific Gas and Electric

Electricity

PG&E is a publicly traded utility company that generates, purchases, and transmits energy under contract with the California Public Utilities Commission. Its service territory is 70,000 square miles, roughly extending north to south from Eureka to Bakersfield, and east to west from the Sierra Nevada mountain range to the Pacific Ocean. The electricity distribution system of PG&E consists of 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines. PG&E owns and maintains above- and below-ground networks of electric and gas transmission and distribution facilities throughout the region. Additionally, it still delivers electricity and natural gas services to Berkeley, Oakland, and other nearby communities, although these cities recently shifted to energy provider EBCE.

PG&E electricity is generated by a combination of sources such as coal-fired power plants, nuclear power plants, and hydro-electric dams as well as newer sources of energy, such as wind turbines and photovoltaic plants or “solar farms.” “The Grid,” or bulk electric grid, is a network of high-voltage transmission lines

¹⁷ University of California, Berkeley, 2020. UC Berkeley Campus Design Standards. Section 01 81 13, Sustainable Design Requirements, pages 90-91. https://facilities.berkeley.edu/sites/default/files/ucb_campus_design_standards_2020.pdf, accessed December 15, 2020.

linked to power plants in the PG&E system. The distribution system, consisting of lower-voltage secondary lines, is at the street and neighborhood level, with overhead or underground distribution lines, transformers, and individual service “drops” that connect to the individual customer. Total electricity consumption in PG&E’s service area was 104,855 gigawatt-hours in 2019.¹⁸ Sources of electricity sold by PG&E under the base plan in 2018, the latest year for which data are available, were:¹⁹

- 39 percent renewable, consisting mostly of solar and wind
- 15 percent natural gas
- 13 percent large hydroelectric
- 34 percent nuclear

Natural Gas

PG&E natural gas transmission pipeline systems serve approximately 4.3 million customers in northern and central California. The system is operated under an inspection and monitoring program. The system operates in real time on a 24-hour basis and includes leak inspections, surveys, and patrols of the pipelines. A new program, the Pipeline 2020 program, aims to modernize critical pipeline infrastructure; expand the use of automatic or remotely operated shut-off valves; catalyze development of next-generation inspection technologies; develop industry-leading best practices; and enhance public safety partnerships with local communities, public officials, and first responders. Total natural gas consumption in PG&E’s service area was 497,023,773,121 thousand-British thermal units (kBtu) for 2018.²⁰

East Bay Community Energy

The EBCE is a Community Choice Energy (CCE) program formed in 2018 as a joint powers authority (JPA) by Alameda County and 11 of its cities, including of the cities of Berkeley and Oakland, and operates as a not-for-profit public agency. The EBCE offers three program options—the Renewable 100 program, which provides 100 percent renewable power from wind and solar; the Brilliant 100 program, which provides at least 75 percent renewable and 100 percent carbon-free power from solar, wind, and hydroelectric; and the Bright Choice program, which provides at least 60 percent renewable and 86 percent carbon-free power. The electric energy provided by the EBCE is conveyed to customers through existing PG&E infrastructure. PG&E continues to maintain the grid, repair lines, and conduct customer billing within the EBCE service area. Overall, the EBCE provided 5,819,911 megawatt-hours (MWh) of electricity in 2019.²¹

¹⁸ California Energy Commission, 2020, Electricity Consumption by Planning Area, <http://www.ecdms.energy.ca.gov/elecbyplan.aspx>, accessed December 3, 2020.

¹⁹ California Energy Commission, 2019, 2018 Power Content Label Pacific Gas and Electric Company, https://www.energy.ca.gov/sites/default/files/2020-01/2018_PCL_PG_and_E.pdf.

²⁰ California Energy Commission, 2020, Gas Consumption by Planning Area. <http://www.ecdms.energy.ca.gov/gasbyplan.aspx>, accessed December 3, 2020.

²¹ East Bay Community Energy, 2020, About Us, <https://ebce.org/about/>, accessed December 15, 2020.

University of California, Berkeley

UC Berkeley also provides energy to its facilities through the wholesale power program, on-site PV arrays, in-building chillers, a cogeneration plant on the Campus Park to produce steam and electricity that is powered by natural gas, and a steam plant on the Clark Kerr Campus. The Campus Park's cogeneration plant consists of a 125 pounds per square inch gauge (psig) steam distribution infrastructure servicing approximately 120 UC Berkeley buildings and providing approximately 90 percent of the electricity and 100 percent of the steam needs for the Campus Park. Initially a boiler plant, cogeneration (combined heat and power generation) was added to UC Berkeley's facilities in 1987. The three existing boilers were kept as backup for and augmentation to steam requirements. The cogeneration plant operates 24 hours per day, year-round (except for planned and unplanned outages when the boiler acts as backup), and produces electricity at a rate of 12 kilovolts and steam at 120 psig. In addition, five rooftop PV systems and one canopy PV system operated by UC Berkeley provide approximately 1,386,131 kilowatt-hour (kWh) per year of renewable electricity.

Energy Demand

LRDP Update

UC Berkeley currently consumes nontransportation energy (e.g., electricity and natural gas) associated with the cogeneration plant, boilers, and emergency generators installed in the various facilities on and off the UC Berkeley campus, and energy associated with the buildings themselves (e.g., lighting and appliances). Existing nontransportation energy demands are shown in Table 5.5-2, Existing Nontransportation Energy Demand.

TABLE 5.5-2 EXISTING NONTRANSPORTATION ENERGY DEMAND

Use	Electricity (MWh/Yr)	Natural Gas (MMBtu/Yr)	Distillate Fuel Oil (Gal/Yr)
Cogeneration Plant	N/A	2,334,237	N/A
Emergency Generators	N/A	N/A	12,167
Boilers	N/A	213,192	N/A
On- and Off-Campus Buildings	3,611,978	N/A	N/A

Note: MMBtu = million British thermal units.

Source: UC Berkeley, 2020.

In addition, the UC Berkeley vehicle fleet and vehicle trips generated by vendors, visitors, students, and staff associated with UC Berkeley consume transportation fuels (e.g., diesel and gasoline). Existing transportation energy demands associated with UC Berkeley are shown in Table 5.5-3, Existing Baseline Year 2018 Transportation Energy Demand.

TABLE 5.5-3 EXISTING BASELINE YEAR 2018 TRANSPORTATION ENERGY DEMAND

Existing Vehicles	Gasoline		Diesel		Electricity	
	Annual VMT	Annual Gallons	Annual VMT	Annual Gallons	Annual VMT	Annual Gallons
UC Berkeley Fleet	3,670,843	128,003	1,977,354	61,024	N/A	N/A
Vendors	96,522	6,147	33,437	3,490	41	14
Visitors	15,633,632	587,313	131,919	3,167	246,003	82,698
Commute – Students	12,845,564	482,573	108,393	2,602	202,132	67,949
Commute – Staff	51,795,902	1,945,830	437,060	10,492	815,036	273,986
Total	84,042,463	3,149,865	2,688,163	80,774	1,263,212	424,647

Source: UC Berkeley, 2020.

Housing Project #1

The 0.92-acre project site is occupied by surface parking, UC Berkeley office space, eight apartments with eight residential units (16 beds), UC Berkeley's shuttle maintenance garage, and vacant commercial buildings. UC Berkeley's shuttle garage, referred to as Oxford Garage, is on the northeastern corner of the site and was built in 1930. Existing energy usage includes electricity and natural gas demand associated with the residential units. Other existing energy demands are associated with fuel use from vehicle trips generated by residents and visitors to the site.

Housing Project #2

The 2.8-acre project site is in an urbanized area that has for the last several decades been used as an informal park. Current on-site uses include gardens, lawn space, a paved basketball court, picnic tables, a small wooden stage, and a public restroom building. At the time of the preparation of this EIR, the site was primarily occupied by people without housing (homeless) in multiple encampments—from single sleeping bags and small tents to large tents and makeshift tarps/tents. Existing energy demand associated with the project site includes fuel usage from limited vehicle trips generated by general park users as there is no on-site parking. Other existing energy demands include the electricity demand associated with the basketball court lighting and restroom.

5.5.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant energy impact if it would:

1. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.
3. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.5.3 IMPACT DISCUSSION

5.5.3.1 METHODOLOGY

According to CEQA Guidelines Appendix F, Energy Conservation, in order to ensure energy implications are considered in project decisions, CEQA identifies that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing wasteful, unnecessary, or inefficient use of energy resources. Environmental effects may include a proposed project's energy requirements and its energy use efficiencies by amount and fuel type during demolition, construction, and operation; the effects of a proposed project on local and regional energy supplies; the effects of a proposed project on peak- and base-period demands for electricity and other forms of energy; the degree to which a proposed project complies with existing energy standards; the effects of a proposed project on energy resources; and the proposed project's projected transportation energy use requirements and its overall use of efficient transportation alternatives. The energy and fuel usage information provided in this section is based on the following sources.

LDRP Update

- **Cogeneration Plant and Stationary Equipment:** Existing energy demand associated with the cogeneration plant, emergency generators, and boilers is based on information provided by UC Berkeley. The cogeneration plant year 2036 energy demands for Options 1 through 3 are provided and are based on Options 2, 11C, and 12, respectively, of the 2020 Campus Energy Plan. Year 2036 energy demands for emergency generators and auxiliary boilers are based on a growth factor of 0.51, which represent the change in total square footage between the baseline year conditions and conditions under the proposed LRDP Update horizon year.
- **Building Energy:** Existing building energy (i.e., electricity) is based on information provided by UC Berkeley. Year 2036 building energy demand is based on the growth factor of 0.51.
- **On-Road Vehicle Fuel Usage:** Fuel usage associated with operation-related vehicle trips is based on fuel usage data obtained from EMFAC2017, Version 1.0.3, and on daily VMT data provided by Fehr & Peers (see Appendix M, Transportation Data, of this Draft EIR).

Housing Projects #1 and #2

- **Building Energy:** All new proposed buildings for both Housing Projects #1 and #2 would be all electric. Thus, no natural gas use is assumed for the proposed buildings. For purposes of this analysis, the electricity demand associated with the proposed building for Housing Project #1 is based on the expected energy use intensity (EUI) of 29 kBtu per square foot per year (kBtu/SF/yr). The electricity demand of the proposed buildings for Housing Project #2 are based on the targeted EUI of 31 kBtu/SF/yr. The electricity demand based on these EUIs does not account for the potential reduction in electricity demand by the renewable electricity generated by the rooftop solar PV systems for the proposed student housing buildings.
- **On-Road Vehicle Fuel Usage:** Fuel usage associated with operation-related vehicle trips are based on fuel usage data obtained from EMFAC2017, Version 1.0.3, and on daily VMT and average daily trip

generation data provided by Fehr & Peers (see Appendix M, Transportation Data, of this Draft EIR). In addition, fuel usage associated with construction-related vehicle trips (i.e., worker and vendor trips) are based on CalEEMod defaults for construction-related trips.

- **Off-Road Equipment Fuel Usage:** Fuel usage for construction-related off-road equipment is based on fuel usage data from OFFROAD2017, Version 1.0.1, and on the construction equipment and activities provided and verified by UC Berkeley (see Table 5.2-8, Construction Activities, Phasing, and Equipment: Housing Project #1, and Table 5.2-9, Construction Activities, Phasing, and Equipment: Housing Project #2, of this Draft EIR for details regarding the anticipated construction schedule and equipment).

5.5.3.2 IMPACT ANALYSIS

ENE-1	The proposed project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.
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The following evaluation of energy usage is associated with buildout of the proposed LRDP Update, Housing Project #1, and Housing Project #2.

LRDP Update

Short-Term Construction

Potential future construction activities that implement the proposed LRDP Update would occur incrementally over the EIR buildout horizon (2036–37), causing short-term demand and consumption of energy from construction worker and vendor vehicle trips and use of construction equipment. Except for Housing Projects #1 and #2, because the proposed LRDP Update is a broad-based policy plan, specific information regarding individual development projects that would implement the proposed LRDP Update is currently unknown. Thus, it would be speculative to estimate short-term energy demand. In general, development projects that implement the proposed LRDP Update would create temporary demands for electricity. However, natural gas is not generally required to power construction equipment, and therefore is not anticipated during construction phases. Electricity use would fluctuate according to the phase of construction. It is anticipated that the majority of electric-powered construction equipment would be hand tools (e.g., power drills and saws) and lighting, which would result in minimal electricity usage during construction activities.

Development projects that implement the proposed LRDP Update would also temporarily increase demands for energy associated with transportation. Transportation energy use depends on the type and number of vehicle trips, vehicle miles traveled, fuel efficiency of vehicles, and travel mode. Energy use during construction would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that use diesel fuel or gasoline. The use of energy resources by these vehicles would fluctuate according to the phase of construction and would be temporary. It is anticipated that the majority of off-road construction equipment, such as demolition and grading equipment, would be gas or diesel powered. Overall, construction contractors are anticipated to

minimize nonessential idling of construction equipment during construction in accordance with Section 2449 of the California Code of Regulations Title 13, Article 4.8, Chapter 9 and as required by CBP AIR-3. Such required practices would limit wasteful and unnecessary energy consumption. In addition, all operation of construction equipment would cease upon completion of project construction. Furthermore, development projects accommodated in the proposed LRDP Update would be similar to projects currently being developed in Berkeley and surrounding cities, and the increase in electricity consumption for construction related to the proposed LRDP Update would not be wasteful or inefficient. Therefore, construction activities associated with development of the proposed LRDP Update would not result in wasteful or unnecessary nontransportation energy demands, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Long-Term Operation

Operation of new development projects accommodated under the proposed LRDP Update would create additional demands for energy compared to existing conditions. Operational use of electricity and natural gas would include heating, cooling, and ventilation of buildings; water heating; operation of electrical systems; use of on-site equipment and appliances; and lighting. In addition, project-generated vehicle trips would result in demand for transportation fuels (e.g., gasoline, diesel, and electricity).

Nontransportation Energy

Table 5.5-4, LRDP Update Nontransportation Energy Demand, shows the potential change in nontransportation energy demand from implementation of the proposed LRDP Update.

TABLE 5.5-4 LRDP UPDATE NONTRANSPORTATION ENERGY DEMAND

Use	Electricity (MWh/Yr)	Natural Gas (MMBtu/Yr)	Distillate Fuel Oil (Gal/Yr)
Central Plant ^a			
Option 1	N/A	1,241,803	N/A
Option 2	269,000	N/A	N/A
Option 3	263,000	314,025	N/A
Emergency Generators ^b	N/A	N/A	18,326
Boilers ^b	N/A	321,110	N/A
On- and Off-Campus Buildings ^b	5,440,366	N/A	N/A
Total LRDP Update with Option 1	5,440,366	1,562,913	18,326
Total LRDP Update with Option 2	5,709,366	321,110	18,326
Total LRDP Update with Option 3	5,703,366	635,135	18,326
Existing Energy Demand	3,611,978	2,547,429	12,167
Net Change Between Option 1 and Existing	1,828,388	(984,516)	6,159
Net Change Between Option 2 and Existing	2,097,388	(2,226,319)	6,159
Net Change Between Option 3 and Existing	2,091,388	(1,912,294)	6,159

Notes: () = negative value; MMBtu = million British thermal units.

a. Based on Scenario 12 (Hybrid Nodal Recovery) of the 2020 Campus Energy Plan.

b. Based on a growth factor of 0.51, which represent the change in total square footage between the baseline year conditions and conditions under the LRDP Update horizon year.

Source: UC Berkeley, 2020.

As shown in Table 5.5-4, the change in energy demand is provided for each of the potential cogeneration system options. Each option would result in an overall net increase in electricity demand and a net decrease in natural gas use. Though a net increase in electricity demand would result from implementation of the proposed LRDP Update, the three options considered for the cogeneration system would provide improvements and updates that result in the system operating more efficiently than it does currently. The proposed LRDP Update also includes upgrades to the existing electric network on the Campus Park, the Hill Campus West, and the Hill Campus East. Furthermore, there are several potential renewable energy systems being considered, such as installation of a solar PV system on the Hill Campus East that would be a battery energy storage system, use of biogas fuel cells, development of a geothermal energy system, and integration of a mechanical energy storage system. In addition to the renewable systems, future developments and large renovations under the proposed LRDP Update would strive to achieve and be consistent with the UC Sustainable Practices Policy to be LEED “Silver” certified at minimum and seek for LEED “Gold” certification or higher when possible. In addition, per the UC Sustainable Practices Policy, UC Berkeley plans on an energy use intensity reduction of 2 percent per year through energy-efficient upgrades and retrofits, and to have future projects exceed adopted California Building Code energy-efficiency requirements by at least 20 percent. Overall, per Section 01 81 13(2) of the UC Berkeley Campus Design Standards, projects accommodated under the proposed LRDP Update would need to comply with the applicable sustainable policies in the UC Sustainable Practices Policy.

In addition, the following Infrastructure, Resilience, and Emergency Systems objectives of the proposed LRDP Update would also contribute to minimizing nontransportation energy demand:

- Upgrade campus infrastructure to support existing and future facility needs, and coordinate infrastructure planning with other campus planning efforts.
- Support UC system and UC Berkeley goals to reduce energy consumption and achieve carbon neutrality by transitioning to carbon-free energy supply sources and evaluating on-site renewable energy generation.
- Plan building renovations and design new buildings to minimize energy consumption and meet and strive to exceed UC Sustainable Practices Policy energy requirements, through strategies such as passive ventilation, optimal building orientation and landscape design. Consider opportunities for reducing embodied carbon, when aligned with programmatic needs and other improvements.
- Implement water conservation measures designed to reduce potable and non-potable water consumption in campus buildings and landscapes to meet and strive to exceed UC Sustainable Practices Policy water conservation requirements. Consider water reuse strategies when non-potable water use is appropriate.

Water conservation and reuse would reduce the electricity required to treat and transport water. As part of the proposed project, UC Berkeley and future development projects would implement the following utilities and service systems (USS) CBP, which has been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

CBP USS-3 (Updated): UC Berkeley will continue to incorporate specific water conservation measures into project design to reduce water consumption and wastewater generation. This could include the use of special air-flow aerators, water-saving shower heads, flush cycle reducers, low-volume toilets,

weather-based or evapotranspiration irrigation controllers, drip irrigation systems, and the use of drought resistant plantings in landscaped areas, and collaboration with the East Bay Municipal Utility District to explore suitable uses of recycled water.

This CBP would require future projects to incorporate water conservation fixtures, systems, and plantings. The ongoing implementation of CBP USS-3, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional energy-related impacts. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Overall, though potential future development that implements the proposed LRDP Update could result in an increase in electricity demand, future development projects would be more energy efficient overall than the older buildings that would be replaced or renovated, and electricity and energy demands would be provided through renewable sources. Therefore, energy impacts associated with nontransportation energy demands would be *less than significant*.

Transportation Energy

The growth accommodated under the proposed LRDP Update would consume transportation energy (e.g., gasoline, diesel, and electricity) from the use of motor vehicles by vendors, visitors, students, and staff. Table 5.5-5, LRDP Update Transportation Energy Demand, shows the net change in VMT and fuel usage under horizon year 2036 conditions of the proposed LRDP Update from existing baseline year 2018 conditions and existing uses under year 2036 conditions.

TABLE 5.5-5 LRDP UPDATE TRANSPORTATION ENERGY DEMAND

Fuel Type	Existing Baseline Year 2018	Existing Year 2036 ^a	Project Horizon Year 2036	Net Change from Existing Baseline Year 2018	Net Change from Existing Year 2036
Gasoline					
VMT ^b	84,042,463	81,706,532	99,253,841	15,211,377	17,547,308
Gallons	3,149,865	2,090,629	2,530,165	-619,700	439,536
Fuel Efficiency	26.68	39.08	39.23	12.55	0.15
Diesel					
VMT ^b	2,688,163	3,294,353	3,494,924	806,762	200,571
Gallons	80,774	91,615	95,509	14,734	3,893
Fuel Efficiency	33.28	35.96	36.59	3.31	0.63
Electricity					
VMT ^b	1,263,212	4,229,677	5,190,686	3,927,474	961,009
KWh	3,757,720	14,481,265	17,771,500	14,013,780	3,290,235
Fuel Efficiency	2.97	3.42	3.42	0.45	0

Notes:

a. Represents existing uses as they currently exist in baseline year 2018 operating under year 2036 conditions.

b. Based on daily VMT provided by IBI Group. VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (California Air Resources Board, 2008, October, Climate Change Proposed Scoping Plan: A Framework for Change).

Source: EMFAC2017 Version 1.0.3.

As shown in Table 5.5-5, annual VMT associated with gasoline-powered vehicles would increase under horizon year 2036 conditions of the proposed LRDP Update by 15,211,377 miles per year (mi/yr) compared to existing baseline year 2018 conditions. However, overall annual gasoline consumption would decrease by 619,700 gallons per year (gal/yr). Additionally, fuel efficiency would increase by 12.55 MPG. Though diesel-fueled vehicles would see an increase in VMT and fuel use of 806,762 mi/yr and 14,734 gal/yr, respectively, fuel efficiency would improve by 3.31 MPG. Similarly, VMT and energy demand associated with electric vehicles (EV) would also increase under horizon year 2036 conditions of the proposed LRDP Update compared to baseline year 2018 conditions. However, the fuel efficiency would also improve by 0.45 miles per kilowatt hour (mi/kWh). The improvement in fuel efficiency would be attributable to regulatory compliance (e.g., CAFE standards) that trend toward cars that are more fuel efficient and the natural turnover of older, less-fuel-efficient vehicles for newer, more-fuel-efficient vehicles. The CAFE standards are not directly applicable to residents or land use development projects, but to car manufacturers. Thus, vendors, visitors, and university students and staff do not have direct control in determining the fuel efficiency of vehicles manufactured and sold. However, compliance with the CAFE standards by car manufacturers would ensure that vehicles produced in future years have greater fuel efficiency and would generally result in an overall benefit of reducing fuel usage by providing the vendors, visitors, staff, and students of UC Berkeley with options for more fuel-efficient vehicles.

Compared to existing uses under year 2036 conditions, the proposed LRDP Update would result in an increase in VMT and fuel usage for all fuel types (see “Net Change from Existing Year 2036” column in Table 5.5-5). However, the fuel efficiency would either be slightly improved or the same, and implementation of the proposed LRDP Update would not result in less efficiency in transportation fuel usage. Additionally, although VMT associated with EV and thus electricity usage would increase under the with-project horizon year 2036 scenario when compared to existing baseline, because of mandatory regulations described in Section 5.5.1.1, Regulatory Framework, (i.e., RPS, SB 350, and SB 100) and the general trend toward increasing the supply and production of energy from renewable sources, it is anticipated that a greater share of electricity used to power EVs will be from renewable sources in future years (e.g., individual and UC Berkeley-owned PV systems, continued purchased electricity from EBCE, and/or purchased electricity from PG&E that is generated from renewable sources).

In addition to regulatory compliance that would contribute to more fuel-efficient vehicles and less demand for fuels, the proposed LRDP Update includes mobility-related initiatives, objectives, strategies, and improvements that would contribute to minimizing overall VMT and thus fuel usage associated with UC Berkeley. Some initiatives include enhancement of existing pedestrian pathways and bicycle routes to establish comprehensive pedestrian and bicycle networks, and development of multiple mobility hubs throughout the Campus Park, the Clark Kerr Campus, and the City Environs Properties.

The proposed LRDP Update would also seek to improve upon the existing transportation demand management (TDM) strategies of UC Berkeley, such as exploring incentives and programs to reduce the number of faculty, staff, and students that drive alone to the UC Berkeley campus. Furthermore, the proposed LRDP Update includes Mobility Systems objectives that focus on prioritizing pedestrian, bicycle, and transit access to the UC Berkeley campus and improving the pedestrian and bicycle infrastructure:

- Prioritize more sustainable and carbon-neutral transportation solutions for campus mobility needs, and include TDM strategies when choosing locations for new campus facilities.
- Develop legible, convenient, accessible, and safe circulation networks that prioritize pedestrian, bicycle, and transit access to the campus, and that are integrated with broader regional transportation networks.
- Prioritize pedestrian and bicycle travel within the Campus Park and to adjacent university properties by removing opportunities for unnecessary vehicle travel, redesigning potential areas of conflicts to improve and prioritize pedestrian and bicycle safety, and including pedestrian and bicycle facilities in new projects, to the extent feasible. Maintain necessary emergency and handicap accessible vehicle access to university properties while prioritizing pedestrian and bicycle access.

Additionally, the proposed LRDP Update includes the following relevant Land and Property Acquisition objective:

- If acquisition is pursued, sites that are located within walking distance to existing campus facilities or that have convenient transit access to the Campus Park should be prioritized.

As part of the proposed project, UC Berkeley and future development projects would implement the air quality (AQ) and transportation (TRAN) CBPs listed here, which have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP AIR-1 (Updated):** UC Berkeley will continue to implement the same or equivalent transportation programs as currently exist, that strive to reduce the use of single-occupant and/or greenhouse gas emitting (internal combustion engine) vehicles by students, staff, faculty, and visitors to the UC Berkeley campus.
- **CBP TRAN-1: (Updated):** UC Berkeley will implement bicycle, pedestrian, and transit access and circulation improvements as part of new building projects, major renovations, and landscape projects. Improvements will address the goal of increasing non-vehicular commuting and safety; improving access from adjacent campus or city streets and public transit; reducing multi-modal conflict; providing bicycle parking; and providing commuter amenities.

These CBPs would contribute to reducing VMT, which would also contribute to reducing transportation fuel demands. The ongoing implementation of CBP AIR-1 and TRAN-1, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional energy impacts. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects. In addition, as discussed in Chapter 5.15, Transportation, under the proposed LRDP Update, UC Berkeley would continue its existing TDM program, which would reduce transportation energy use.

Overall, regulatory compliance (e.g., CAFE standards) and implementation of the proposed mobility-related improvements and programs would ensure that transportation energy demand under the proposed LRDP

Update would not be inefficient, wasteful, or unnecessary. Therefore, energy impacts associated with the LRDP Update, as they pertain to transportation energy demands, would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Short-Term Construction

Construction of the proposed project would create temporary increased demands for electricity and vehicle fuels compared to existing conditions and would result in short-term transportation-related energy use.

Nontransportation Electrical Energy

It is anticipated that the majority of construction equipment would be gas or diesel powered. Though electric-powered equipment could be used for interior construction and architectural coatings, it is anticipated that the majority of electric-powered construction equipment would be hand tools (e.g., power drills and saws) and lighting, which would result in minimal electricity usage during construction activities. Additionally, the use of electricity would be temporary and would fluctuate according to the phase of construction. Overall, construction of Housing Project #1 would be similar in energy usage to other comparable development projects. Therefore, project-related construction activities would not result in wasteful or unnecessary electricity demands pertaining to nontransportation electricity, and impacts would be *less than significant*.

Nontransportation Natural Gas Energy

It is not anticipated that construction equipment used for Housing Project #1 would be powered by natural gas, and no natural gas demand is anticipated during construction. Therefore, impacts would be *less than significant* with respect to natural gas usage.

Transportation Energy

Transportation energy use depends on the type and number of trips, VMT, fuel efficiency of vehicles, and travel mode. Transportation energy use during construction would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that use diesel fuel and/or gasoline. The use of energy resources by these vehicles would fluctuate according to the phase of construction and would be temporary. It is anticipated that the majority of off-road construction equipment, such as those used during grading, would be gas or diesel powered. Energy consumption during construction (2021 through 2024) was calculated using the CalEEMod (v. 2016.3.2.25) computer model and data from the EMFAC2017 (v. 1.0.3) and OFFROAD2017 (v. 1.0.1) databases. The results for Housing Project #1 are shown in Table 5.5-6, Construction-Related Fuel Usage: Housing Project #1. In addition, the table also shows the combined fuel usage of Housing Projects #1 and #2.

TABLE 5.5-6 CONSTRUCTION-RELATED FUEL USAGE: HOUSING PROJECT #1

Project Component	Gas		Diesel		Electricity	
	VMt	Gallons	VMt	Gallons	VMt	kWh
Construction Worker Commute	4,263,174	145,690	32,908	733	80,333	26,242
Construction Vendor Trips	20,457	4,182	454,470	56,701	0	0
Construction Truck Haul Trips	68	17	122,690	19,049	0	0
Construction Off-Road Equipment	N/A	2,795	N/A	37,976	N/A	0
Housing Project #1 Total	4,283,698	152,685	610,067	114,458	80,333	26,242
Housing Projects #1 and #2 Total	4,877,588	173,819	700,766	149,089	93,215	30,432

Notes: VMt = vehicle miles traveled; kWh = kilowatt hour

Source: CalEEMod Version 2016.3.2.25; EMFAC2017 Version 1.0.3; OFFROAD2017 Version 1.0.1

Overall, use of all construction-equipment would cease upon completion of project construction. Thus, impacts related to electricity and transportation fuel use during construction would be temporary and would not require expanded energy supplies or the construction of new infrastructure. Furthermore, to limit wasteful and unnecessary energy consumption, the construction contractors would minimize nonessential idling of construction equipment during construction, in accordance with Section 2449 of the California Code of Regulations, Title 13, Article 4.8, Chapter 9, and as required by CBP AIR-3. Such required practices would limit wasteful and unnecessary energy consumption. In addition, the project site is served by numerous regional freeway systems (e.g., Interstates 80 and 580 and State Route 24) that provide the most direct routes from various areas of the region, which would contribute to minimizing unnecessary use of transportation fuels associated with construction trips. Moreover, electrical energy would be available for use during construction from existing power lines and connections, either precluding or minimizing the use of less efficient generators. Therefore, project-related construction activities would not result in wasteful or unnecessary energy demands pertaining to transportation energy, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Long-Term Operation

Operation of Housing Project #1 would create additional demands for electricity compared to existing conditions and would result in increased transportation energy use. Operational use of energy would include heating, cooling, and ventilation of buildings; water heating; operation of electrical systems; use of on-site equipment and appliances; and lighting.

Nontransportation Energy

Electrical service to Housing Project #1 would be provided by EBCE through connections to existing off-site electrical lines and new on-site infrastructure. As shown in Table 5.5-7, Project Annual Electricity Consumption: Housing Project #1, electricity use for Housing Project #1—based on the assumptions outlined in Section 5.5.3.1, Methodology—would be 4,468 MWh/yr and would be 8,515 MWh/yr for both

Housing Projects #1 and #2. Overall, though Housing Project #1 would result in an increase in electricity demand, it would include project design features to minimize energy demand to the extent feasible. For example, to conserve water, all landscaping would include native and/or adaptive and drought-resistant plant materials with similar water usage and adapted to a dry summer and intermittent rain in the winter season. Moreover, the electricity provided by EBCE would be sourced from renewable and carbon-neutral sources, and Housing Project #1 would have a rooftop solar PV system that would provide up to 28.75 kWh per square foot per year (kWh/SF/yr) of renewable electricity on-site. This proposed solar PV system would reduce electricity demand from EBCE and further support a transition to renewable energy. Furthermore, the proposed project would incorporate water-efficiency measures, such as low-flow toilets, sinks, and showers and efficient laundry washing machines, which would reduce the energy required to treat, transport, and distribute water. Overall, the proposed Housing Project #1 would be LEED-certified Gold. Thus, in consideration of these planned and potential features, operation of Housing Project #1—and ultimately, operation of both Housing Projects #1 and #2 (see discussion below for Housing Project #2)—would not result in inefficient, wasteful, or unnecessary use of energy. Therefore, impacts would be *less than significant*.

TABLE 5.5-7 PROJECT ANNUAL ELECTRICITY CONSUMPTION: HOUSING PROJECT #1

Land Use	Electricity	
	KBTU/Year ^a	MWh/Year ^b
Housing Project # Building	15,254,000	4,468
Housing Project #1 Total	15,254,000	4,468
Housing Projects #1 and #2 Total	29,070,576	8,515

Notes: kWh = kilowatt hour; KBTU = kilo-British thermal unit

a. Based on an EUIs of 29 KBTU/SF/Yr and 31 KBTU/SF/Yr for Housing Project #1 and Housing Project #2, respectively.

b. Based on conversion factor of 0.3414 KBTU per kWh.

Source: UC Berkeley, 2020.

Transportation Energy

Housing Project #1 residents, staff, vendors, and visitors would consume transportation energy during operations from the use of motor vehicles. The efficiency of these motor vehicles is unknown, such as the average miles per gallon. Estimates of transportation energy use are based on the overall VMT and their associated transportation energy use. The project-related VMT would primarily come from the student residents, staff, employees, and vendors. As shown in Table 5.5-8, Project Annual Operation-Related Fuel Usage: Housing Project #1, the annual VMT for the Housing Project #1 is estimated to be 358,264 miles and to be 997,458 miles for Housing Projects #1 and #2. However, overall, both proposed housing projects would provide more housing options to accommodate the existing and future student population. In addition to providing more housing options, the proposed housing sites would also potentially provide closer housing options to the UC Berkeley campus, which could contribute to minimizing vehicle trips and overall VMT. Furthermore, Housing Project #1 would limit the available vehicular parking spaces to retail employees and building facilities personnel and would provide 250 long-term bicycle parking spaces for residents. These two design features would contribute to minimizing vehicle trips and VMT. Thus, overall, it

is expected that operation-related fuel usage associated with Housing Project #1—and ultimately, with both Housing Projects #1 and #2 (see the following discussion for Housing Project #2)—would not result in inefficient, wasteful, or unnecessary energy usage. Therefore, impacts would be *less than significant* with respect to operation-related fuel usage.

TABLE 5.5-8 PROJECT ANNUAL OPERATION-RELATED FUEL USAGE: HOUSING PROJECT #1

Proposed Project	Gasoline		Diesel		CNG		Electricity	
	Annual VMT	Annual Gallons	Annual VMT	Annual Gallons	Annual VMT	Annual Gallons	Annual VMT	Annual kWh
Housing Project #1	342,431	10,894	5,450	348	17	7	10,376	3,358
Combined Housing Projects #1 and #2	953,594	30,337	14,923	934	46	18	28,895	9,350

Source: EMFAC2017 v. 1.0.3. Annual VMT for project operations are based information found in Appendix G, Energy Data, of this Draft EIR.

Significance without Mitigation: Less than significant.

Housing Project #2

Short-Term Construction

Nontransportation Electrical Energy

The discussion for Housing Project #1 is also applicable to Housing Project #2. Therefore, project-related construction activities would not result in wasteful or unnecessary electricity demands pertaining to nontransportation electricity, and impacts would be *less than significant*.

Nontransportation Natural Gas Energy

The discussion for Housing Project #1 is also applicable to Housing Project #2. Therefore, impacts would be *less than significant* with respect to natural gas usage.

Transportation Energy

Transportation energy use during construction would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that use diesel fuel and/or gasoline. Similar to Housing Project #1, the use of energy resources by these vehicles would fluctuate according to the phase of construction and would be temporary. Additionally, it is anticipated that the majority of off-road construction equipment, such as those used during grading, would be gas or diesel powered. The calculated fuel usage associated with construction of Housing Project #2 are shown in Table 5.5-9, Construction-Related Fuel Usage: Housing Project #2. The table also shows the combined construction-related fuel usage of Housing Projects #1 and #2.

TABLE 5.5-9 CONSTRUCTION-RELATED FUEL USAGE: HOUSING PROJECT #2

Project Component	Gas		Diesel		Electricity	
	VMt	Gallons	VMt	Gallons	VMt	kWh
Construction Worker Commute	591,524	19,703	4,855	105	12,882	4,190
Construction Vendor Trips	2,349	477	52,593	6,424	0	0
Construction Truck Haul Trips	16	4	33,251	4,792	0	0
Construction Off-Road Equipment	N/A	950	N/A	23,310	N/A	0
Housing Project #2 Total	593,889	21,134	90,699	34,631	12,882	4,190
Housing Projects #1 and #2 Total^a	4,877,588	173,819	700,766	149,089	93,215	30,432

Notes: VMt = vehicle miles traveled; kWh = kilowatt hour

a. Overall, construction-related fuel usage associated with Housing Project #2 is smaller compared to Housing Project #1 due to the shorter overall construction duration, shorter duration for the building construction phase, and less overall land use square footage.

Source: CalEEMod Version 2016.3.2.25; EMFAC2017 Version 1.0.2; OFFROAD2017 Version 1.0.1

The discussion for Housing Project #1 above is also applicable to Housing Project #2. For example, use of all construction-equipment would cease upon completion of project construction. Furthermore, nonessential idling of construction equipment during construction would be minimized in compliance with Section 2449 of the California Code of Regulations, Title 13, Article 4.8, Chapter 9. In addition, the project site is served by numerous regional freeway systems (e.g., Interstates 80 and 580 and State Route 24) that provide the most direct routes from various areas of the region, which would contribute to minimizing unnecessary use of transportation fuels associated with construction vehicle trips. Therefore, project-related construction activities would not result in wasteful or unnecessary energy demands pertaining to transportation energy, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Long-Term Operation

Similar to Housing Project #1, operation of Housing Project #2 would also create additional demands for electricity compared to existing conditions and would result in increased transportation energy use.

Nontransportation Energy

Similar to Housing Project #1, electrical service to Housing Project #2 would be provided by EBCE. As shown in Table 5.5-10, Project Annual Electricity Consumption: Housing Project #2, electricity use for Housing Project #2—based on the assumptions outlined in Section 5.5.3.1, Methodology—would be 4,047 MWh/yr and would be 8,515 MWh/yr for both Housing Projects #1 and #2. Housing Project #2 would incorporate water-efficiency measures such as low-flow toilets, sinks, and showers and efficient laundry washing machines to ensure that a 36 percent reduction goal for potable water consumption is met. Furthermore, similar to Housing Project #1, all landscaping would include native and/or adaptive and drought-resistant plant materials. A reduction in water use would reduce the energy required to treat, transport, and distribute water. Moreover, Housing Project #2 would include a solar PV system, which would reduce electricity demand from EBCE and support a transition to renewable energy. Thus, operation of

Housing Project #2—and ultimately, operation of both Housing Projects #1 and #2 (see the previous discussion for Housing Project #1)—would not result in inefficient, wasteful, or unnecessary use of energy. Therefore, impacts would be *less than significant*.

TABLE 5.5-10 PROJECT ANNUAL ELECTRICITY CONSUMPTION: HOUSING PROJECT #2

Land Use	Electricity	
	kBtu/Year ^a	MWh/Year ^b
Student Housing Building	11,067,155	3,242
Affordable and Supportive Housing	2,749,421	805
Housing Project #2 Total	13,816,576	4,047
Housing Projects #1 and #2 Total	29,070,576	8,515

Notes: kWh = kilowatt hour; kBtu = kilo-British thermal unit

a. Based on an EUIs of 29 kBtu/SF/Yr and 31 kBtu/SF/Yr for Housing Project #1 and Housing Project #2, respectively.

b. Based on conversion factor of 0.3414 kBtu per kWh.

Source: UC Berkeley, 2020.

Transportation Energy

Housing Project #2 would also consume transportation energy during operations from the use of motor vehicles. The efficiency of these motor vehicles is unknown, such as the average miles per gallon. Estimates of transportation energy use are based on the overall VMT and its associated transportation energy use. Similar to Housing Project #1, VMT associated with Housing Project #2 would primarily be generated from student residents, staff, employees, and vendors. As seen in Table 5.5-11, Project Annual Operation-Related Fuel Usage: Housing Project #2, the annual VMT for the Housing Project #2 is estimated to be 639,184 miles and estimated to be 997,458 miles for Housing Projects #1 and #2. However, both proposed housing projects would provide more housing options to accommodate the existing and future student population. In addition, the proposed housing sites would also potentially provide more housing options closer to UC Berkeley than existing and future residents could otherwise obtain, which could contribute to minimizing vehicle trips and overall VMT. Thus, overall, it is expected that operation-related fuel usage associated with the proposed project would not result in inefficient, wasteful, or unnecessary energy usage. Therefore, impacts would be *less than significant* with respect to operation-related fuel usage.

TABLE 5.5-11 PROJECT ANNUAL OPERATION-RELATED FUEL USAGE: HOUSING PROJECT #2

Proposed Project	Gasoline		Diesel		CNG		Electricity	
	Annual VMT	Annual Gallons	Annual VMT	Annual Gallons	Annual VMT	Annual Gallons	Annual VMT	Annual kWh
Housing Project #2	611,163	19,443	9,473	586	29	11	18,519	5,993
Combined Housing Projects #1 and #2	953,594	30,337	14,923	934	46	18	28,895	9,350

Source: EMFAC2017 v. 1.0.3. Annual VMT for project operations are based information found in Appendix G, Energy Data, of this Draft EIR.

Significance without Mitigation: Less than significant.

ENE-2	The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.
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LRDP Update

Based upon its constitutional autonomy, UC Berkeley is not subject to local regulations related to energy usage. However, it is subject to State regulations and plans. The State's electricity grid is transitioning to renewable energy under California's RPS Program. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. As stated, the RPS goals have been updated since adoption of SB 1078 in 2002. In general, California has RPS requirements of 33 percent renewable energy by 2020 (SB X1-2), 40 percent by 2024 (SB 350), 50 percent by 2026 (SB 100), 60 percent by 2030 (SB 100), and 100 percent by 2045 (SB 100). SB 100 also establishes RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. The statewide RPS requirements do not directly apply to individual development projects, but to utilities and energy providers such as EBCE and PG&E, whose compliance with RPS requirements would contribute to the State objective of transitioning to renewable energy. The land uses accommodated under the proposed LRDP Update would comply with the current and future iterations of the Building Energy Efficiency Standards and CALGreen. Furthermore, impact discussion ENE-1 discloses that several potential renewable energy systems are being considered, such as installation of a solar PV system on the Hill Campus East that would be a battery energy storage system, use of biogas fuel cells, development of a geothermal energy system, and integration of a mechanical energy storage system. In addition to the renewable systems, future developments and large renovations under the proposed LRDP Update would achieve and be consistent with the UC Sustainable Practices Policy to be LEED "Silver" certified at minimum and LEED "Gold" certified or higher when possible. In addition, per the UC Sustainable Practices Policy, UC Berkeley plans on an energy use intensity reduction of 2 percent per year through energy-efficient upgrades and retrofits, and to have future projects exceed adopted California Building Code energy-efficiency requirements by at least 20 percent. Therefore, overall, implementation of the proposed LRDP Update would not conflict with or obstruct implementation of California's RPS program, and *no impact* would occur.

Significance without Mitigation: No impact.

Housing Project #1

As previously stated, only certain utilities and energy providers, such as EBCE and PG&E are subject to the California RPS Program. However, Housing Project #1 would include a solar PV system that would provide up to 28.75 KWh/SF/yr of renewable electricity on-site. This would reduce electricity demand from EBCE and support a transition to renewable energy. Furthermore, the proposed project would, at minimum, comply with the current Building Energy Efficiency Standards and CALGreen. It would incorporate water-efficiency measures, such as low-flow toilets, sinks, and showers and efficient laundry washing machines as well as native and drought-tolerant landscaping, all of which would reduce the energy required to treat, transport, and distribute water. In addition, the proposed Housing Project #1 would be LEED-certified Gold. Thus, in consideration of these planned and potential features, operation of Housing Project #1—and ultimately, operation of both Housing Projects #1 and #2 (see the following discussion for Housing Project

#2)—would not conflict with or obstruct implementation of California’s RPS program, and *no impact* would occur.

Significance without Mitigation: No impact.

Housing Project #2

As previously stated, the California RPS Program would not be directly applicable to proposed Housing Project #2. Similar to Housing Project #1, Housing Project #2 would, at minimum, be built to meet the current Building Energy Efficiency Standards and CALGreen. It would include a solar PV system, which would reduce electricity demand from EBCE and support a transition to renewable energy. It would also include native and/or adaptive and drought-resistant plant materials and incorporate water-efficiency measures such as low-flow toilets, sinks, and showers and efficient laundry washing machines to ensure that a 36 percent reduction goal for potable water consumption is met. A reduction in water use would reduce the energy required to treat, transport, and distribute water. Therefore, in consideration of these planned and potential features, operation of Housing Project #2—and ultimately, operation of both Housing Projects #1 and #2—would not conflict with or obstruct implementation of California’s RPS program, and *no impact* would occur.

Significance without Mitigation: No impact.

ENE-3	The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to energy.
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LRDP Update

The areas considered for cumulative impacts to electricity and natural gas supplies are the service areas of EBCE and PG&E, respectively, in addition to UC Berkeley’s cogeneration plant described in Section 5.5.1.2. Other projects would also generate increased electricity and natural gas demands. However, all projects within the EBCE and PG&E service areas would be required to comply with the Building Energy Efficiency Standards and CALGreen, which would contribute to minimizing wasteful energy consumption and promoting renewable energy sources. Furthermore, as discussed under impact discussion ENE-1, developments under the proposed LRDP Update would be consistent with the UC Sustainable Practices Policy to be LEED “Silver” certified at minimum and LEED “Gold” certified whenever possible. In addition, per the UC Sustainable Practices Policy, UC Berkeley plans on an energy use intensity reduction of 2 percent per year through energy-efficient upgrades and retrofits, and to have future projects exceed adopted California Building Code energy-efficiency requirements by at least 20 percent, which would contribute to increasing energy efficiency and energy conservation for nontransportation energy. The proposed LRDP Update also includes the potential installation of several renewable energy systems. These components of the proposed LRDP Update would contribute to increasing energy efficiency and transitioning to clean renewable energy sources.

Additionally, the proposed LRDP Update includes mobility related initiatives, strategies, and improvements that would contribute to minimizing overall VMT and reducing transportation-related fuel usage associated with UC Berkeley. These include improving the existing pedestrian and bicycle networks and TDM strategies. Therefore, cumulative energy impacts associated with proposed LRDP Update would be *less than significant*, and impacts would not be cumulatively considerable.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

Development of Housing Projects #1 and #2, in combination with other developments in the region, would contribute to the increased demand in electricity. However, as discussed under impact discussion ENE-1, both projects would be designed to be all electric. In addition, Housing Project #1 would be designed to achieve the LEED Gold certification, which would further contribute to increasing energy efficiency. Both housing projects would also install a solar PV system to generate renewal electricity on-site. Furthermore, Housing Projects #1 and #2 would incorporate water-efficiency measures, such as low-flow toilets, sinks, and showers and efficient laundry washing machines. Both projects would incorporate native plant species into landscaping. These features would contribute to reducing water demand and thus, reduce the energy required to treat, transport, and distribute water. Overall, development of Housing Projects #1 and #2 would also provide more local housing options to accommodate existing and future students, which could contribute to minimizing vehicle trips and overall VMT. Therefore, cumulative energy impacts associated with proposed Housing Projects #1 and #2 would be *less than significant*, and project impacts would not be cumulatively considerable.

Significance without Mitigation: Less than significant.

5.6 GEOLOGY AND SOILS

This chapter describes the potential geology and soils impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and setting, identifies criteria used to determine impact significance, provides an analysis of the potential geology and soils impacts, and identifies the UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts.

The analysis in this chapter is based in part on the Existing Setting, Geologic Hazards, UC Berkeley – LRDP Update EIR, Berkeley, California, dated September 2020, prepared by Alan Kropp & Associates. A complete copy of this technical report is included in Appendix H, Geology and Soils Data, of this draft environmental impact report (Draft EIR).

5.6.1 ENVIRONMENTAL SETTING

5.6.1.1 REGULATORY FRAMEWORK

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 was intended to mitigate the hazard of surface fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault. The act delineates “Earthquake Fault Zones” (formerly called an Alquist-Priolo Special Study Zone) along faults that are “sufficiently active” and “well defined.” The maps are distributed to all affected cities, counties, and State agencies for the use in planning and controlling new or renewed construction. Local agencies must regulate most development projects within the zones and there can generally be no construction within 50 feet of an active fault trace. The zones vary in width, but average about one-quarter-mile wide. As discussed later in this chapter in Section 5.6.1.2, Alquist-Priolo Earthquake Fault Zones have been delineated on the UC Berkeley campus.

Seismic Hazard Mapping Act

The Seismic Hazard Mapping Act of 1990 was intended to protect the public from the hazards of nonsurface fault rupture from earthquakes, including strong ground shaking, liquefaction, seismically induced landslides, or other ground failure. The California Geological Survey prepares and provides agencies with seismic hazard zone maps that identify areas susceptible to fault hazards other than surface rupture. The Seismic Hazard Mapping Act prohibits responsible agencies from approving projects within seismic hazard zones until a site-specific investigation is completed to determine if the hazard is present, and the inclusion, if a hazard is found, of appropriate mitigation. Maps of Alameda County show geologic fault hazards other than surface rupture in the EIR Study Area, as discussed later in this chapter in Section 5.6.1.2, Existing Conditions.

California Building Code

Every State public agency enforcing building regulations must adopt the provisions of the California Building Code (CBC), which is Title 24, Part 2, of the California Code of Regulations. The most recent version is the 2019 CBC (effective January 1, 2020). The CBC is updated every three years and provides minimum standards to protect property and public safety by regulating the design and construction of excavations, foundations, building frames, retaining walls, and other building elements to mitigate the effects of seismic shaking and adverse soil conditions. The CBC also contains provisions for earthquake safety based on factors including occupancy type, the types of soil and rock on-site, and the strength of ground shaking with specified probability of occurring at a site.

Government Codes for Specific Building Types

While the CBC regulates the design and construction of most buildings and structures in a community, certain facilities have additional requirements from State and federal agencies. These include hospitals, schools, essential facilities, and “lifeline” infrastructure.

- **Public schools.** Public schools that are being constructed or rehabilitated are required to comply with standards under the Field Act, Division of State Architectural standards, and California Education Code Section 17317. The University of California (UC) system and private schools are exempt from this requirement.
- **Essential facilities.** Essential facilities (e.g., police, fire, emergency community facilities, etc.) must comply with the additional standards and requirements of the Essential Services Building Seismic Safety Act.
- **Lifeline infrastructure.** Bridges, utilities, dams/reservoirs, and other infrastructure must adhere to regulations of the California Department of Water Resources, California Department of Transportation, and California Public Utilities Commission.

California Public Resources Code Sections 5097.5 and 30244

Requirements for paleontological resource management are included in Public Resources Code (PRC) Sections 5097.5 and 30244. These statutes prohibit the removal of any paleontological site or feature without permission. As a result, agencies are required to comply with PRC Section 5097.5 for permit action, construction, and maintenance activities. PRC Section 5097.5 also establishes the removal of paleontological resources as a misdemeanor and requires reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, and district) lands.

California Division of Occupational Safety and Health

Construction activities are subject to occupational safety standards for excavation, shoring, and trenching, as specified in California Division of Occupational Safety and Health regulations in the California Code of Regulations, Title 8.

University of California

University of California Seismic Safety Policy

The UC system, including UC Berkeley, follows its adopted Seismic Safety Policy (Seismic Policy), most recently updated in 2017, with review from its Seismic Advisory Board. The Seismic Policy also sets the standards for new construction and renovation and whether an independent seismic peer reviewer is necessary for a given project. The 2017 Seismic Policy is consistent with and supportive of UC Berkeley's long-standing proactive approach to seismic issues by its requirement that every building with significant seismic performance deficiencies must be retrofitted, replaced, or evacuated no later than the year 2030.

The UC Berkeley Seismic Review Committee provides input to project developers and advice to the Campus Architect regarding the structural design of UC Berkeley facilities, with particular regard to seismic performance. Committee membership, appointed by the Chancellor, consists of faculty and emeriti from the disciplines of structural and civil engineering, with an additional faculty member from the College of Environmental Design.

The Seismic Review Committee is specific to UC Berkeley, and the Seismic Advisory Board is for the UC system. They are two different groups of engineers—the Seismic Review Committee reviews all relevant UC Berkeley projects, and the Seismic Advisory Board provides guidance to University of California Office of the President (UCOP) on seismic design, performance ratings, and rehabilitation, and assists in developing UCOP Seismic Safety policy and guidelines.

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues. Key sections of the Design Standards relevant to geology and soils include restrictions on use of expansive soils, dewatering, prohibition of construction within 50 feet of a known active fault trace, and discouragement of construction on suspected fault zones or other earthquake hazard areas. Relevant sections of the Design Standards are in Division 31.00.00, Earthwork; Division 33.40.00, Subdrainage; and Appendix G, the UC Berkeley Seismic Guidelines. The Seismic Guidelines provide technically sound, clear, and consistent requirements for design, retrofit, and evaluation of UC Berkeley buildings.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to geology and soils as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are

identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.6.3, Impact Discussion.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the cities of Berkeley and Oakland, and Alameda and Contra Costa counties related to geology and soils that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

City of Berkeley General Plan

The City of Berkeley General Plan Disaster Preparedness and Safety (S) Element contains the following policies related to geology and soils that are applicable to the proposed project.

- Policy S-13 Hazards Identification: Identify, avoid and minimize natural and human-caused hazards in the development of property and the regulation of land use.
- Policy S-14 Land Use Regulation: Require appropriate mitigation in new development, in redevelopment/reuse, or in other applications.
- Policy S-15 Construction Standards: Maintain construction standards that minimize risks to human lives and property from environmental and human-caused hazards for both new and existing buildings.

City of Oakland General Plan

The City of Oakland General Plan Open Space, Conservation, and Recreation Element contains goals and policies related to geology and soils that are applicable to the proposed project. Conservation goals and policies are designated with "CO" as follows:

- Goal CO-1: Natural resources that are conserved and prudently used to sustain life, support urban activities, protect public health and safety, and provide a source of beauty and enjoyment.
 - Policy CO-1.1: Soil loss in new development: Regulate development in a manner which protects soil from degradation and misuse or other activities which significantly reduce its ability to support plant and animal life. Design all construction to ensure that soil is well secured so that unnecessary erosion, siltation of streams, and sedimentation of water bodies does not occur.
 - Policy CO-2.1: Slide hazards: Encourage development practices which minimize the risk of landsliding.

- Policy CO-2.2: Unstable geologic features: Retain geologic features known to be unstable, including serpentine rock, areas of known landsliding, and fault lines as open space. Where feasible, allow such lands to be used for low-intensity recreational activities.

The City of Oakland General Plan Safety Element contains the following goals and policies related to geology and soils that are applicable to the proposed project. Geology-related policies from this element are designated “GE” as follows:

- Policy GE-1: Develop and continue to enforce and carry out regulations and programs to reduce seismic hazards and hazards from seismically triggered phenomena.
- Policy GE-2: Continue to enforce ordinances and implement programs that seek specifically to reduce the landslide and erosion hazards.
- Policy GE-3: Continue, enhance or develop regulations and programs designed to minimize seismically related structural hazards from new and existing buildings.

Alameda County General Plan

The Alameda County General Plan Safety Element contains the following goal and actions related to geology and soils that are relevant to the proposed project.

- Goal 1: To minimize risks to lives and property due to seismic and geologic hazards.
 - Action A2: Require applications for development within Alquist-Priolo Study Zones to include geological data that the subject property is not traversed by an active or potentially active fault, or that an adequate setback can be maintained between the fault trace and the proposed new construction.
 - Action A3: Require sites to be developed in accordance with recommendations contained in the soil and geologic investigations reports.
 - Action A7: Require soils and/or geologic reports for development proposed in areas of erodible soils and potential slope instability.
 - Action A16: On sites with slopes greater than 30 percent, require all development to be clustered outside of the 30 percent slope area. With the exception that development upon any area outside of the Urban Growth Boundary where the slope exceeds 25% shall not be permitted.
 - Action A17: Aspects of all development in hillside areas, including grading, vegetation removal and drainage, should be carefully controlled in order to minimize erosion, disruption to natural slope stability, and landslide hazards. The County’s development standards and guidelines permit application review process, Section 15.08.240 of its Building Ordinance, the Grading Erosion and Sediment Control Ordinance (Chapter 15.36 of the Alameda County General Ordinance Code), the Stormwater Management and Discharge Control Ordinance (Chapter 13.08), and Subdivision Ordinance (Chapter 16) shall serve to implement this policy.

Contra Costa County General Plan

The Contra Costa County General Plan Safety Element contains goals and policies related to geology and soils. The following list includes some of the goals and policies most relevant to the proposed project.

- Goal 10-A: To protect human life and reduce the potential for serious injuries from earthquakes; and to reduce the risks of property losses from seismic disturbances which could have severe economic and social consequences for the County as a whole.
- Goal 10-B: To reduce to a practical minimum injuries and health risks resulting from the effects of earthquake ground shaking on structures, facilities and utilities.
- Goal 10-E: To minimize risk of loss of life or injury due to landslides, both ordinary and seismically-induced.
 - Policy 10-3: Because the region is seismically active, structures for human occupancy shall be designed to perform satisfactorily under earthquake conditions.
 - Policy 10-7: The County should encourage cooperation between neighboring government agencies and public and private organizations to give appropriate attention to seismic hazards to increase the effectiveness of singular and mutual efforts to increase seismic safety.
 - Policy 10-9: In areas susceptible to high damage from ground shaking, geologic-seismic and soils studies shall be required prior to the authorization of major land developments and significant structures (public or private).
 - Policy 10-10: Policies regarding liquefaction shall apply to other ground failures which might result from groundshaking but which are not subject to such well-defined field and laboratory analysis.
 - Policy 10-26: Approvals of public and private development projects in areas subject to slope failures shall be contingent on geologic and engineering studies which define and delineate potentially hazardous conditions and recommend adequate mitigation.
 - Policy 10-29: Significant very steep hillsides shall be considered unsuitable for types of development which require extensive grading or other land disturbance.
 - Policy 10-30: Development shall be precluded in areas where landslides cannot be adequately repaired.

5.6.1.2 EXISTING CONDITIONS

LRDP Update

Geologic Setting

Regional Geology

The EIR Study Area is located on the western slope of the East Bay hills and the flatlands adjacent to these hills. It is situated east of San Francisco Bay, within the northern portion of the Coast Ranges geomorphic province of California. The region is characterized by northwest-trending mountain ranges and valleys that generally parallel the major geologic structures, such as the San Andreas and Hayward faults. The oldest widespread rocks in the region are highly deformed sedimentary and volcanic rocks of the Franciscan Assemblage, formed during the Mesozoic Age (225 million to 65 million years ago). These rocks are in fault contact with similar-age sedimentary rocks of the Mesozoic Age–Great Valley Sequence. The Mesozoic rocks are, in turn, overlaid by a diverse sequence of sedimentary and volcanic rocks from the Tertiary Age (65 million to 1.8 million years ago). Alluvial materials, derived from these bedrock units, have been conveyed by streams draining the East Bay hills and deposited in a broad alluvial plain. Since the deposition of the bedrock units, the Mesozoic and Tertiary rocks have been extensively deformed by repeated

episodes of folding and faulting. In general, upland areas, such as the East Bay hills, have experienced some tectonic uplift over time, and the adjacent alluvial plains and lowlands have experienced some subsidence.

Database of Previous Geotechnical Investigations

The primary tool used to develop site-specific information about existing conditions within the boundaries of the EIR Study Area was a database of geotechnical information supplied by UC Berkeley. The database includes 432 records regarding past projects for UC Berkeley; 248 of the records contain the past project report with detailed geotechnical information. To review representative information, the records with a project report were placed into zones, using the five zones shown on Figure 3-2, EIR Study Area, in Chapter 3, Project Description, of this Draft EIR. The City Environs Properties area was further divided into subareas for properties north, west, and south of the Campus Park (plus the one property at 1608 4th Street, although no project reports were received for that site).

A new spreadsheet was created using the representative database records with project report data for each of the zones utilized. If there were a series of reports for one project, only the final report was examined. Where there were reports scattered across the zone, a representative distribution of reports was incorporated. Reports for roadways (such as Centennial Drive) were not included. The reviewed reports were particularly useful in relation to describing the soils present, the bedrock depths, the groundwater depths, and the existing building-foundation types in the EIR Study Area. The number of project reports included for each zone (and subarea) is presented in Table 5.6-1, Number of Project Geotechnical Reports on Spreadsheet for Each LRDP Zone.

TABLE 5.6-1 NUMBER OF PROJECT GEOTECHNICAL REPORTS ON SPREADSHEET FOR EACH LRDP ZONE

Zone	Number of Project Reports on Project Spreadsheet
Campus Park	56
Clark Kerr Campus	2
Hill Campus West	11
Hill Campus East	3
City Environs Properties – North	2
City Environs Properties – West (Includes Housing Site #1)	5
City Environs Properties – South (Includes Housing Site #2)	9

Source: Alan Kropp & Associates, 2020, included in Appendix H, Geology and Soils Data, of this Draft EIR.

Topography

The topography in the EIR Study Area generally consists of gentle, southwesterly descending slopes, with the exception of the topography in the Hill Campus East. The Campus Park varies in elevation from about 400 feet above mean sea level (msl) in the northeast corner to about 210 feet above msl in the southwest corner, with inclinations steepening in the northeast quadrant. The slopes are fairly uniform, except where Strawberry Creek flows westerly through the center of the Campus Park. The City Environs Properties have similar slopes to the Campus Park, with the elevations of the Housing Projects # 1 and #2 sites being about 200 and 275 feet above msl, respectively. The property at 1608 4th Street is on an even more gently sloping

area and is at an elevation of about 20 feet above msl. The Smyth-Fernwald site is the steepest of the City Environs Properties, with an elevation change from about 650 feet above msl in the highest area to about 470 feet above msl in the southwest corner; this relief of about 180 feet occurs over a distance of approximately 700 feet.

The developed portion of the Clark Kerr Campus is similar to the Campus Park topography, with gentle, southwesterly descending slopes that steepen in the northeast corner. These portions of the Clark Kerr Campus generally vary from about 515 feet above msl opposite the Smyth-Fernwald site to about 390 feet above msl in the southwest corner. The undeveloped canyon on the eastern boundary of this site steepens considerably and has inclinations of about 2.5:1 (horizontal to vertical).

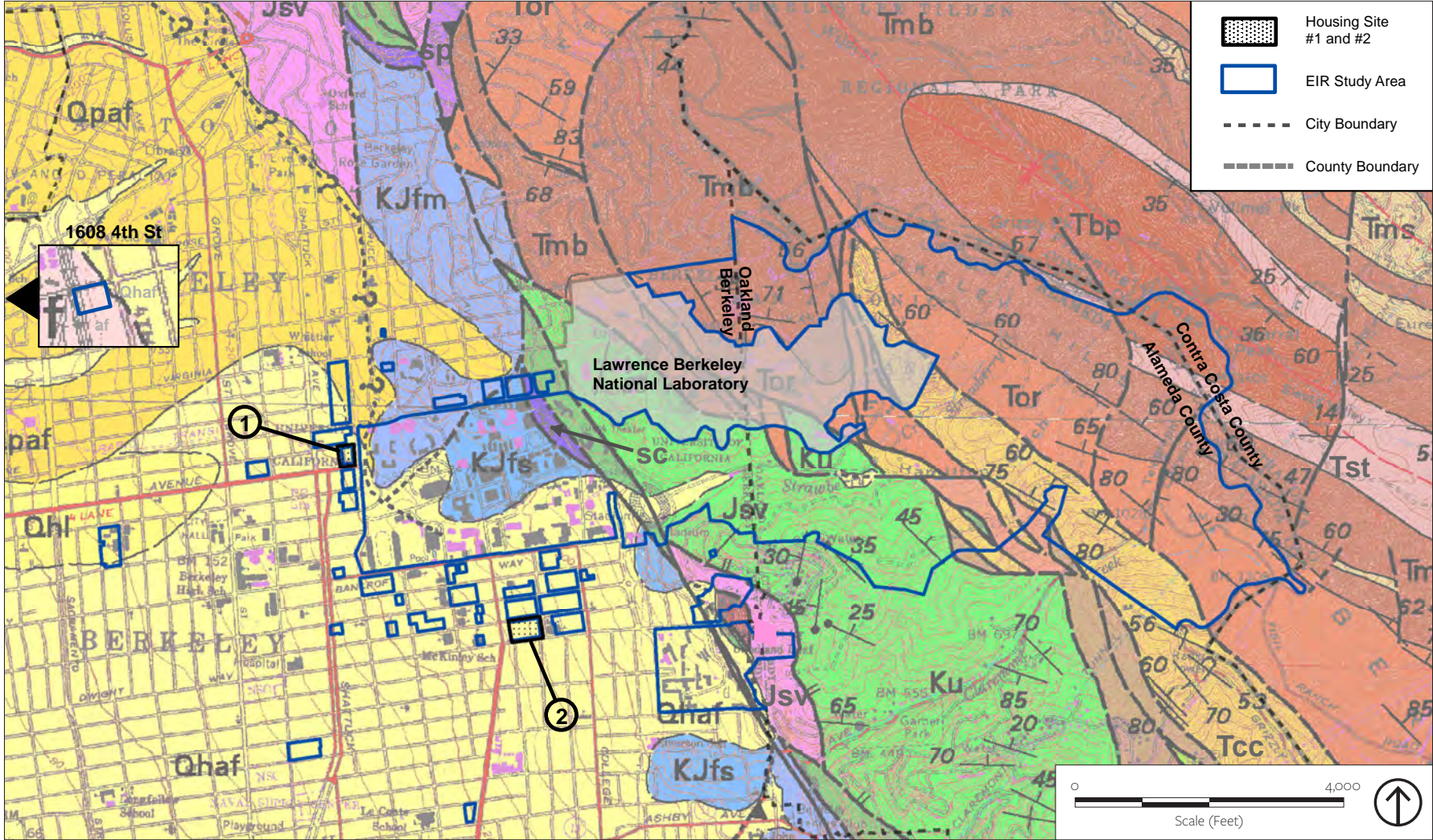
The Hill Campus East typically consists of a series of southwest-trending, secondary ridges separated by intervening drainage swales. The two most prominent canyons are Strawberry Canyon, through the center of the area, and Claremont Canyon, near the southern boundary. The highest points within this area are along Grizzly Peak Boulevard, with elevations ranging between approximately 1,500 and 1,700 feet above msl. The lowest portion of the area is by the entry gate to Lawrence Berkeley National Laboratory, with an elevation of about 560 feet above msl. The slopes typically have inclinations between about 2:1 and 3:1.

Geology

The geologic units present in the EIR Study Area are structurally complex and lithologically diverse, as shown on the geologic map on Figure 5.6-1, Geologic Map. As stated in Section 5.6.1.2, under the heading “Regional Geology,” the hillside areas contain various sedimentary and volcanic bedrock units at the ground surface or at a shallow depth, and the areas downslope are on a broad alluvial plain. As seen on Figure 5.6-1, Geologic Map, the Hill Campus East is located entirely within the bedrock area, and all of the other zones of the EIR Study Area have a mixture of bedrock units (toward the northeast) and alluvial units (toward the southwest).

Materials belonging to the Franciscan Assemblage (KJfs and KJfm symbols on Figure 5.6-1) are present in the northeast corner of the Campus Park and adjacent areas. These materials were formed in a subduction zone trench below an ocean, and, as a result of plate tectonics, a broad mixture of rocks and sediments were mixed together in a complex arrangement. Materials that were on the western crust of the Pacific Plate moved easterly and were subducted below the Great Valley Complex (described below). KJfs material consists of sandstone, and KJfm is a mixture of about 14 bedrock types, sometimes in large blocks. These units were generally hard where encountered in exploratory borings.

Slightly younger than the Franciscan Assemblage are the materials that belong to the Great Valley Complex; this complex is divided into the Coast Range Ophiolite and the underlying Great Valley Sequence. With respect to the Coast Range Ophiolite, a small sliver of sc (silica-carbonate rock) is present by the northeast corner of the Campus Park. This is a very hard bedrock, sometimes present in outcrops at the ground surface (such as Founder’s Rock). Below the upper portions of the Smyth-Fernwald site and the Clark Kerr Campus, an elongate deposit of Jsv (keratophyre and quartz keratophyre) is present. This bedrock unit is also quite hard and at a very shallow depth below the existing ground surface.



Source: "Geologic Map and Map Database of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco Counties, California," by R.W. Graymer, dated 2000. Alan Kropp & Associates, 2021.

Qhaf	Alluvial fan and fluvial deposits (Holocene)	Tmb	Moraga Formation (late Miocene)	Jsv	Keratophyre and quartz keratophyre (late Jurassic)	KJfs	Franciscan complex sandstone, undivided (late Cretaceous to late Jurassic)
Qhl	Natural levee deposits (Holocene)	Tor	Orinda Formation (late Miocene)	sp	Serpentine	KJfm	Franciscan complex, mélangé (Cretaceous late Jurassic)
Qpaf	Alluvial fan and fluvial deposits (Pleistocene)	Tsm	Unnamed glauconitic mudstone (Miocene and Oligocene (?))	sc	Silica-carbonate rock	fs	Graywacke and meta-graywacke blocks
Tbp	Bald Peak Basalt (late Miocene)	Kss	Unnamed lithic sandstone (Cretaceous)	Tcc	(Claremont Chert (late to middle Miocene))		
Tst	Siesta Formation (late Miocene)	Ku	Undivided Great Valley complex rocks (Cretaceous)				

Figure 5.6-1
Geologic Map

The only unit belonging to the Great Valley Sequence present within the EIR Study Area is Ku; this is a mixture of sandstone, siltstone, and mudstone. It is present below much of the Hill Campus West and the lower portion of the Hill Campus East. Borings drilled in this material have encountered deep weathering and highly variable strengths.

The upper portion of the Hill Campus East is underlain by four different Tertiary-Age deposits: Tmb, Tor, Tcc, and Tsm. The limits of each material and the relationship to other units are complex, as seen on Figure 5.6-1, Geologic Map. Tmb (Moraga Formation) is primarily basalt and andesite volcanic flow material, with some rhyolite tuff. Tor (Orinda Formation) is a nonmarine sedimentary deposit of conglomerate, sandstone, siltstone, and mudstone. Tcc (Claremont Chert) consists of chert, with small amounts of shale and sandstone. Tsm is an unnamed mudstone. Very few borings have been drilled in these materials, so site-specific data is not available; but published data and local experience indicate Tmb and Tcc are very suitable for construction, and Tor and Tsm are quite variable.

A broad alluvial plain is present southwest of the bedrock areas, and the three types of alluvium within the EIR Study Area (Qhaf, Qhl, and Qpaf), shown on Figure 5.6-1, Geologic Map, are very similar from an engineering standpoint. The depth of the alluvial materials over the bedrock becomes thicker toward the southwest, and borings near the southwest corner of the Campus Park encountered bedrock at a depth of about 50 feet below the current ground surface. The building at 1608 4th Street is located in an area of fill material placed over the alluvium. Since no data is available for that structure, the thickness of the fill material could not be established.

Unique geologic features are those that are unique to the field of geology. Each rock unit tells a story of the natural processes operating at the time it was formed. The rocks and geologic formations exposed at the earth's surface or revealed by drilling and excavation are our only record of that geologic history. What makes a geologic unit or feature unique can vary considerably. For example, a geologic feature may be considered unique if it is the best example of its kind and has distinctive characteristics of a geologic principle that is exclusive locally or regionally, is a key piece of geologic information important to geologic history, contains a mineral that is not known to occur elsewhere in the region, or is used as a teaching tool. As illustrated on Figure 5.6-1, Geologic Map and described above, unique geological features are not common in the EIR Study Area. The geologic processes are generally the same as those in other parts of the state, country, and even the world. The geology and soils in the EIR Study Area site are common throughout the region and are not considered to be unique.

Soils

The predominant soil type at the ground surface across all of the EIR Study Area is silty clay, often sandy and sometimes gravelly. Laboratory testing of soil samples from borings for geotechnical investigations indicate the clay is generally stiff to hard. When the clay soils are at the ground surface and dried in the sun, they become very hard. The expansive characteristics of the soil materials are often evaluated in testing laboratories using swell tests, expansion index tests, and Atterberg Limits testing. These tests indicate the expansion potential of the clay soils varies from low to critically high.

Below the surface clay soils, layers of a wide variety of other soils include additional clays, silts, sands, and gravels, often in mixtures of soils due to the alluvial origin of most of these materials. The thickness of these soil layers varies widely and extends to the underlying bedrock.

Groundwater

The depth at which groundwater was encountered in borings provided in the geotechnical-report database indicated significant variability. In some cases, no groundwater was encountered within a boring if the boring was terminated before groundwater was reached, and in other cases, the drilling method precluded obtaining groundwater depths due to the use of water in the boring. In most cases, the groundwater depth was provided from data at the time the boring was drilled and then backfilled; thus, the equilibrium level of groundwater may not have been established, and the groundwater may also vary with seasonal changes. Nonetheless, the depths can be useful, and typical depths are listed in Table 5.6-2, Groundwater Depths.

TABLE 5.6-2 GROUNDWATER DEPTHS

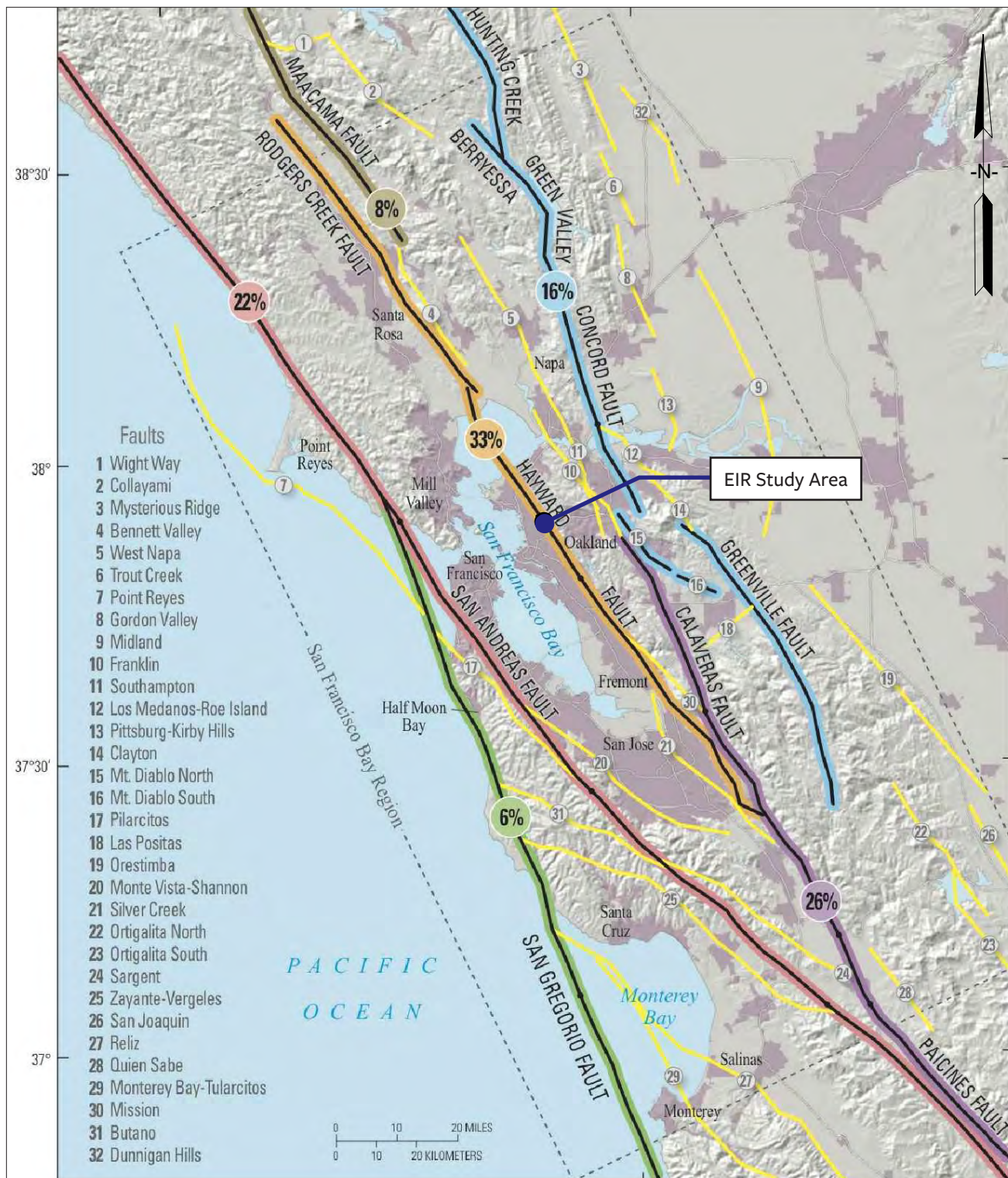
Zone	Typical Depth to Groundwater (feet below ground surface)
Campus Park	5-35
Clark Kerr Campus	8-10
Hill Campus West	15-50
Hill Campus East	10-15
City Environs Properties – North	10-20
City Environs Properties – West (Includes Housing Site #1)	10-20
City Environs Properties – South (Includes Housing Site #2)	10-25

Source: Alan Kropp & Associates, 2020, included in Appendix H, Geology and Soils Data, of this Draft EIR.

Seismic Hazards

Regional Faulting

Seismic activity in the Coast Ranges is generally associated with active faults of the San Andreas system, which includes major active faults both east and west of the EIR Study Area. Over the width of the San Francisco Bay region, approximately 1.5 inches per year of relative horizontal movement occurs between the North American and Pacific Plates. This movement is partially accommodated by earthquakes and creep along several active faults. Locations of these active faults relative to the EIR Study Area are shown on Figure 5.6-2, San Francisco Bay Area Faults, of this Draft EIR.



Source: Base: "Map of Known Active Geologic Faults in the San Francisco Bay Region," USGS, Fact Sheet 2016-3020, 2016. Alan Kropp & Associates, 2020.

#% % equal to the potential of a large earthquake by 2043.



Figure 5.6-2
San Francisco Bay Area Faults

The approximate distances and directions to major, active Bay Area faults are indicated in Table 5.6-3, Distances and Directions to Active Faults, and the other data is generally taken from the United States Geological Survey's Working Group on California Earthquake Probabilities (WGCEP). It should be noted that recent studies have indicated that the Hayward Fault connects with the Rodgers Creek Fault below San Pablo Bay;¹ this has resulted in the maximum magnitude (M) of the combined Hayward–Rodgers Creek fault system being increased over the magnitudes previously attributed to the faults individually.

TABLE 5.6-3 DISTANCES AND DIRECTIONS TO ACTIVE FAULTS

Fault	Distance and Direction from Site	Rupture Length (miles)	Maximum Magnitude	Slip Rate (inches)
Hayward-Rodgers Creek (total length)	Through EIR Study Area	93	7.4	0.4
Calaveras (north of Calaveras Reservoir)	11.3 miles southeast	76	6.8	0.8
Concord-Green Valley	13.7 miles northeast	58	6.9	0.2
Greenville	18.1 miles northeast	36	6.9	0.2
San Andreas (1906 rupture)	18.8 miles southwest	293	7.9	0.9
West Napa	20.7 miles north	32	6.5	0.2
San Gregorio	23.5 miles southwest	109	7.3	0.3
Maacama	88 miles northwest	182	7.4	0.4

Note: Distances are approximate.

Source: Alan Kropp & Associates, 2020, included in Appendix H, Geology and Soils Data, of this Draft EIR.

Historic Seismicity

The San Francisco Bay region has experienced several large earthquakes. A summary of the more significant earthquakes in the region is given below.

- **The Hayward Earthquake of October 21, 1868.** An earthquake of about M 6.8 on the southern segment of the Hayward Fault caused significant damage throughout the region. Surface ground rupture extended approximately 30 miles. The northern limit of ground rupture was in the vicinity of Mills College. The epicenter of the 1868 earthquake was in the area of present-day Castro Valley.
- **The 1858 and 1911 Earthquakes.** Two other earthquakes greater than M 6 are thought to have occurred on the Hayward Fault—in 1858 (M 6.1) and 1911 (M 6.6). Both of these earthquakes were centered in or near the southern portion of the Hayward Fault.
- **The San Francisco Earthquake of April 18, 1906.** Historically, the largest recorded earthquake in the region was the great San Francisco earthquake of 1906 (M 7.9) on the San Andreas Fault near San Francisco. This earthquake caused strong-to-violent ground shaking throughout much of west-central California and caused widespread damage, including some damage in Berkeley.
- **The Loma Prieta Earthquake of October 17, 1989.** The M 7.1 Loma Prieta earthquake occurred near the San Andreas Fault in the Santa Cruz Mountains. The earthquake resulted in 63 deaths and

¹ Alan Kropp & Associates, 2020, Existing Setting, Geologic Hazards, UC Berkeley – LRDP CMP EIR, Berkeley, California

approximately \$6 billion in damage over a wide area. Moderate ground shaking was felt in the Berkeley area.

- **The Napa Earthquake of August 24, 2014.** An M 6.0 earthquake near the city of Napa was felt widely throughout the region, but no fatalities occurred. Damage in the city of Napa was estimated at \$36 million. Ground shaking in the Berkeley area was relatively light.

Future Earthquake Probabilities

The WGCEP has evaluated the probabilities of significant earthquakes in the Bay Area over the next 30 years. The WGCEP reports a 72-percent probability that at least one M 6.7 or greater earthquake will occur in the San Francisco Bay region before 2043. This probability is an aggregate value that considers seven principal Bay Area fault systems and unknown faults (background values). The findings of the WGCEP reports are summarized in Table 5.6-4, Earthquake Probabilities in 2016.

TABLE 5.6-4 EARTHQUAKE PROBABILITIES IN 2016

Fault System	Probability of at Least One Earthquake of Magnitude 6.7 or More by 2043
Hayward-Rodgers Creek	33%
San Andreas	22%
Calaveras-Paicines	26%
San Gregorio	6%
Concord-Green Valley-Greenville	16%
Background	13%

Source: Alan Kropp & Associates, 2020, included in Appendix H, Geology and Soils Data, of this Draft EIR, based on Working Group on California Earthquake Probabilities data.

The published background value indicates that between 2014 and 2043, there is a 13 percent chance that an earthquake with a magnitude greater than 6.7 will occur in the Bay Area on a fault system not characterized in the study.

Fault Rupture

As shown on Figure 5.6-2, San Francisco Bay Area Faults, the active Hayward Fault passes through each of the broad areas being considered in this study. Faults are considered active when they exhibit one or more of three characteristics:

- Evidence of Holocene-Age displacement (within about the past 11,000 years).
- Measurable tectonic creep along fault lines.
- Close proximity to linear concentrations or trends of earthquake epicenters.

The Hayward Fault possesses each of these characteristics. During historical times, well-documented surface creep along the Hayward Fault has averaged rates from about 0.2 to 0.4 inches per year.² However, variability in creep rates—both spatially along the fault trace and temporally—are present along the fault.

² Alan Kropp & Associates, 2020, Existing Setting, Geologic Hazards, UC Berkeley – LRDPCMP EIR, Berkeley, California

As a result of the fault activity, an Earthquake Fault Zone has been designated along the fault, including through the EIR Study Area. Studies for the Memorial Stadium retrofit project concluded that fault rupture might be about three to four feet horizontally and half a foot to one foot vertically for an earthquake with a 10 percent probability of exceedance in 50 years.³ More recently, a characterization of the southern portion of the Hayward Fault estimated a surface rupture of 2.7 to 5.5 feet for an earthquake with a 10 percent probability of exceedance in 50 years.⁴ Applying probable increases for the northern section of the Hayward Fault (compared to the southern section) and for the magnitude increase from the connection to the Rodgers Creek Fault, it is believed these rupture magnitudes might be increased by approximately 50 percent.

The total length of the Hayward-Rodgers Creek fault system is nearly 100 miles, as seen on Figure 5.6-2, San Francisco Bay Area Faults. Table 5.6-4, Earthquake Probabilities in 2016, indicates the Hayward-Rodgers Creek Fault has a 33 percent probability of causing a magnitude 6.7 or greater earthquake by 2043—the highest probability of any Bay Area fault. The location of the Hayward Fault as it passes through the EIR Study Area is illustrated on Figure 5.6-3, Hayward Fault Close-Up. Given the likelihood of an earthquake and its potential rupture magnitude, the hazard associated with surface rupture on this fault is one of the three most serious geologic hazards in the EIR Study Area (the others are ground shaking and landslide in the Hill Campus East).

UC Berkeley has routinely conducted fault-assessment evaluations in the vicinity of the Hayward Fault; more than a dozen fault-study reports were in the database of reports provided by UC Berkeley.

Earthquake Ground Shaking

During large earthquakes, the magnitude of shaking is generally a function of the size and type of the earthquake, the distance of the site from the earthquake epicenter, and the geologic materials at the site. Historically, ground motions in earthquake studies were calculated for the maximum event on a specific fault; this was called a deterministic analysis. However, because of the large number of variables that influence the level of ground shaking, a more common current practice is to estimate the earthquake shaking in terms of the probability that it will be exceeded annually (the annual exceedance probability) or the time period between events (return period); this is called a probabilistic analysis.

To provide consistency in providing the design input across the Campus Park, “Site-Specific Seismic Hazard Analyses and Development of Seismic Design Ground Motions” was developed for UC Berkeley and is routinely updated as new data becomes available. The most recent update was in 2015 and provided both deterministic and probabilistic design information. The criteria in this series of reports have been used by incorporating the recommended response spectrums into the design of new structures on the Campus Park and the surrounding environs, using the most recent version of the seismic design input. Given the very high level of ground shaking during a major earthquake, ground shaking is the second of the three serious geologic hazards at the EIR Study Area and is by far the most widespread.

³ Alan Kropp & Associates, 2020, Existing Setting, Geologic Hazards, UC Berkeley – LRDPCMP EIR, Berkeley, California

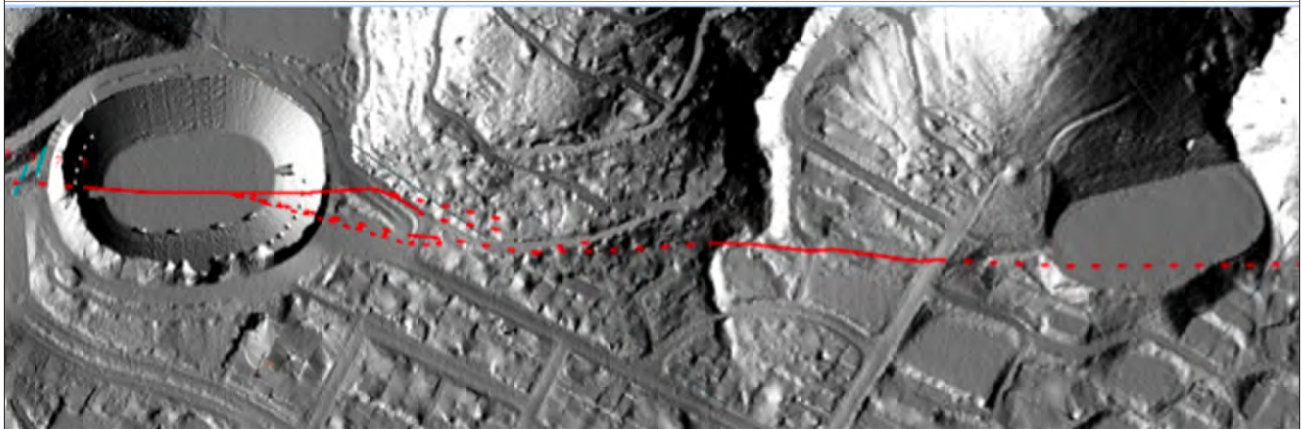
⁴ Alan Kropp & Associates, 2020, Existing Setting, Geologic Hazards, UC Berkeley – LRDPCMP EIR, Berkeley, California

Hayward Fault- Northern Portion of Study Area



Source: <http://seismo.berkeley.edu/hayward/index.html>

Hayward Fault- Southern Portion of Study Area



Source: <https://haywardfaultucberkeley.pressbooks.com/front-matter/cover-picture/>

Source: Base: "Map of Known Active Geologic Faults in the San Francisco Bay Region," USGS, Fact Sheet 2016-3020, 2016. Alan Kropp & Associates, 2020.

Figure 5.6-3
Hayward Fault Close-Up

Liquefaction and Related Ground Failure

Strong earthquakes can set off various forms of ground failure, such as liquefaction, lateral spreading, and seismic densification. Liquefaction is a condition where soils undergo a sudden loss of strength during strong ground shaking and behave like a liquid. Soils that are susceptible to liquefaction include loose- to medium-dense sand and gravel, low-plasticity silt, and some low-plasticity clays when any of these soils are below groundwater. Figure 5.6-4, Geologic Hazards, indicates the areas that may be susceptible to liquefaction, according to analysis by the California Geologic Survey. The California Geologic Survey recommends that a site-specific study be performed for projects in the mapped areas. However, other than the site at 1608 4th Street (for which no data have been provided), the only possible areas that may be subject to liquefaction, according to this map, are the soils within Strawberry Creek and immediately uphill of Memorial Stadium. Site-specific borings across the EIR Study Area have not identified the presence of any significant liquefiable deposits.

Lateral spreading occurs when liquefied soils near a free face (such as a stream channel) move horizontally toward the open area. It is possible that localized lateral spreading could occur in the immediate vicinity of Strawberry Creek, but it is unlikely that ground movement would extend much beyond 10 feet from the top of the creek bank. Seismic densification can occur when loose soils above the level of the groundwater are subject to strong ground shaking and densify. Such loose soils are not common in any portions of the EIR Study Area, although a few local areas with some significant densification were identified in the site-specific reports that were reviewed. These areas include portions of Evans Diamond, Hellman Courts, and the field-hockey field on the Clark Kerr Campus.

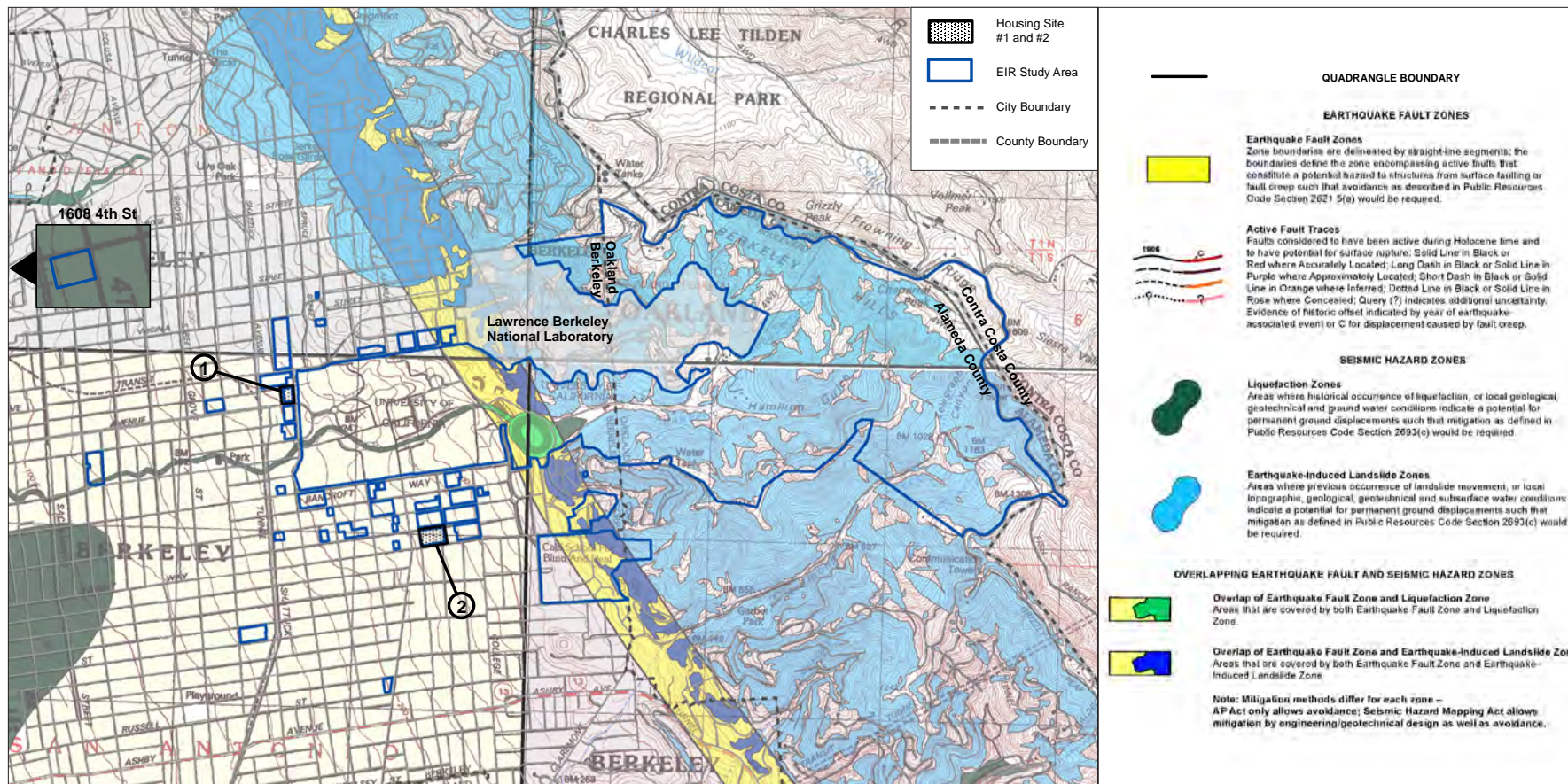
Geologic Hazards

Landslides

Natural landslides occur when soils or bedrock lose strength in a sloping area (often during heavy rains or an earthquake), and gravity causes the materials to slide downhill. Human activities can also cause landslides; these activities include undercutting a hill, placing a heavy weight like fill at the top of a slope, or substantially increasing the amount of water in a hillside. However, since the Campus Park (except for the banks along Strawberry Creek) and the City Environs Properties have only very gentle slopes, these areas are not subject to landslides. Conditions are similar for nearly all of the Hill Campus West and the Clark Kerr Campus (except for the most uphill edge), so these areas are also not subject to landslides. Small, localized slides could occur in the Strawberry Creek bank areas or the eastern edges of the Hill Campus West and the Clark Kerr Campus.

The major area in the EIR Study Area that may be subject to landslides is the Hill Campus East. There is a landslide in this zone that has resulted in a pending project to reroute the Centennial Bridge at the Lawrence Berkeley National Laboratory over Centennial Drive with a new overcrossing. A portion of a landslide map of the Berkeley-Oakland area developed by the California Geologic Survey is presented on Figure 5.6-5, Landslide Map.

5.6 GEOLOGY AND SOILS



Source: Earthquake Zones of Required Investigation Oakland West, Oakland East, Richmond and Briones Valley Quadrangles, California Geological Surveys, 2016. Alan Kropp & Associates, 2021.



Figure 5.6-4
Geologic Hazards

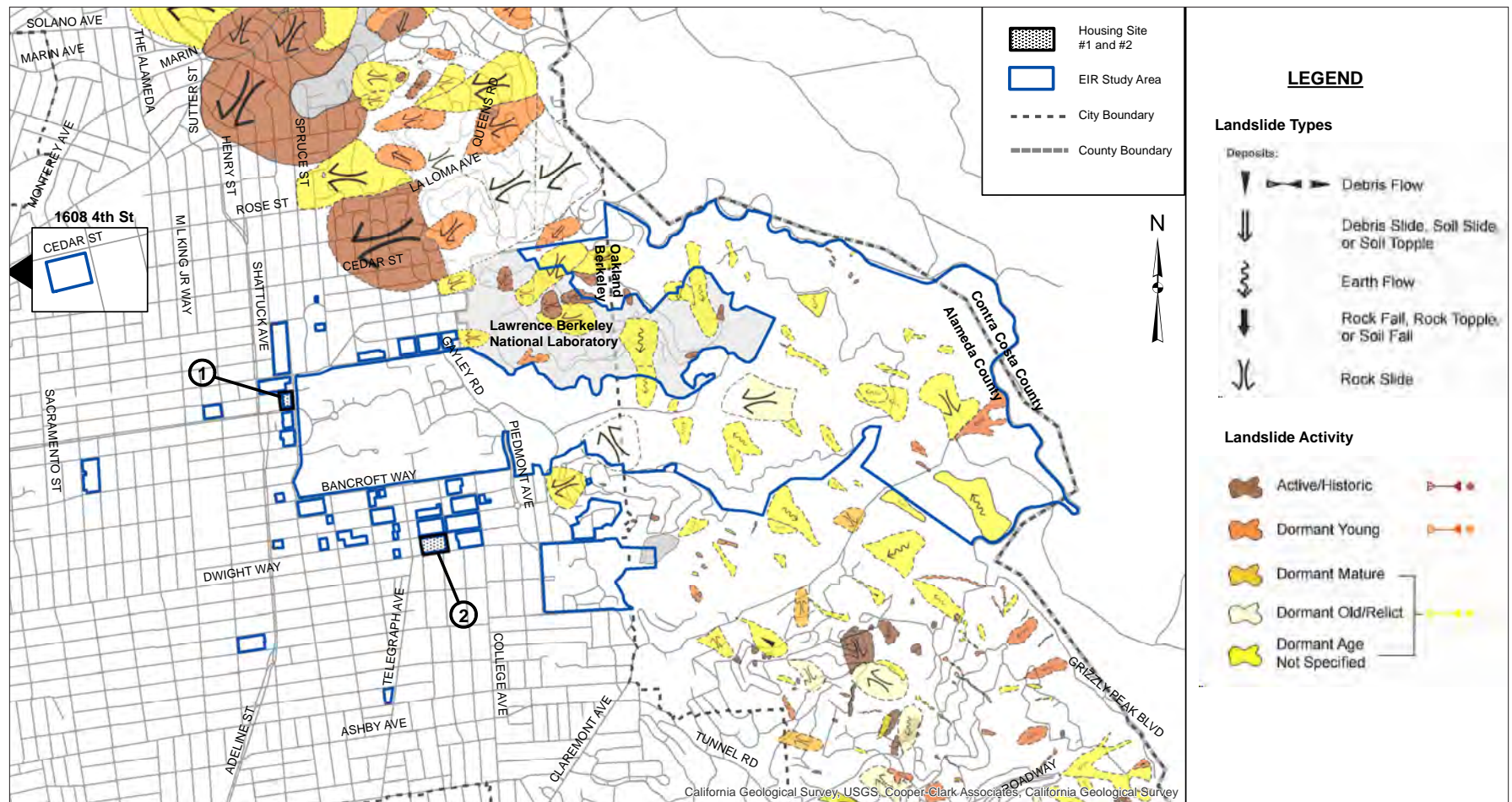


Figure 5.6-5
Landslide Map

Figure 5.6-5, Landslide Map, shows a number of landslides in the Hill Campus East area, although nearly all are considered dormant. It should be noted that these landslides may fail in the future during large earthquakes, and Figure 5.6-4, Geologic Hazards, illustrates the areas that the California Geologic Survey considers may be susceptible to earthquake-induced landslides on its Seismic Hazard Map of the area. The California Geologic Survey recommends that a site be evaluated for such a hazard before development. This is the third significant geologic hazard in the EIR Study Area, but it is only a concern in the Hill Campus East.

Expansive Soils

Expansive soils are silts and clays that swell and shrink as the amount of water in the soil increases and decreases, respectively. This change in water content primarily occurs in the near-surface environment, and deeper soils may undergo much less change in water content; also, the weight of overlying soils minimizes swelling uplift. Laboratory tests on soils throughout the EIR Study Area indicate a broad range of swelling potential, from virtually none to quite large.

Graded Areas

There are very limited locations of significant graded areas within the EIR Study Area because most of the area consists of gentle slopes where minimal grading was needed for development. Some small amount of grading may have been performed in the past to create a level building pad for a large building, and/or to excavate below a proposed structure for a basement. The most obvious exceptions to this general trend of minimal grading are the broad level areas needed for athletic fields, which are scattered throughout the Campus Park and the Clark Kerr Campus. It should be noted that major grading was required when Memorial Stadium was initially constructed, but these graded materials were substantially altered and strengthened during more recent seismic retrofit work.

Since most of the Hill Campus East consists of sloping terrain, grading would typically be necessary for developing structures and facilities. However, with the exception of the Lawrence Hall of Science, Space Sciences Laboratory, the Mathematical Sciences Research Laboratory, and some scattered research facilities just downhill of Grizzly Peak Boulevard, there has been little development to date, and therefore little grading has occurred.

Erosion

Erosion can occur when rainfall or other sources result in the placement of a significant amount of water on a sloping, bare-earth surface. Eroded soils can cause damage if they enter a waterway (like Strawberry Creek) or a storm drain facility that deposits the collected water and entrained sediment into San Francisco Bay. However, other than during construction or immediately after building demolition, soils throughout the EIR Study Area are already vegetated, leading to minimal erosion. During demolition and construction activities, special products are routinely placed at the perimeter of the work area and at storm drain inlets to capture any eroded soils before damage occurs.

Existing Building Assessments

The geotechnical database indicates the earliest buildings on the Campus Park were typically supported by footing foundations; about 50 to 60 years ago, drilled piers came into use for some structures. More recently, mats and micropiles have been used widely, especially to accommodate heavy building loads and overturning concerns. All of these foundation types are commonly used throughout the Bay Area, which has relatively good subsurface support for static loads. The reports in the database did not note many structures with settlement cracks or other foundation-movement problems.

As a result of concerns that strong seismic shaking would impact existing structures, UC Berkeley has adopted a Seismic Safety Policy. All UC Berkeley buildings are evaluated in accordance with the American Society of Civil Engineers Standard Seismic Rehabilitation of Existing Buildings (ASCE-41). UC Berkeley has Expected Seismic Performance Level criteria, which rank the buildings on a scale of I to VII, with I being good and VII being very poor. Structures with ratings of VII have been removed, as have most buildings with a rating of VI. There is a current three-phase program to eliminate the remaining buildings with a rating of VI and reduce the number of buildings with a rating of V. Although the EIR Study Area has no buildings with a rating of VI, there are buildings with a rating of V located in the EIR Study Area. The buildings with a rating of V that are shown in Table 3-2, Potential Areas of New Development and Redevelopment, in Chapter 3, Project Description, are located in the Campus Park (Davis Hall, Donner Lab, Dwinelle Annex, Edwards Stadium, Evans Hall, Lewis Hall, and Piedmont) and City Environs Properties (2111 Bancroft Way). There are a few structures rated V in the Clark Kerr Campus, but these are not currently designated as potential areas of redevelopment.

Subsidence

Subsidence is the incremental vertical lowering of alluvial landscapes that is usually attributed to the overdraft of groundwater aquifers. Subsidence has been historically documented in the alluvium below the East Bay hills and is considered a potential hazard in the EIR Study Area.⁵ According to a recent study⁶ using interferometric synthetic aperture radar (InSAR), the Berkeley area has undergone an average of about two millimeters/year of subsidence from 2007 to 2018. The probability of subsidence impacts is generally low due to the generally uniform vertical movement in the EIR Study Area. Groundwater storage by East Bay Municipal Water District and statutory commitments to sustainable groundwater management practices reduce the potential for future land subsidence, and ongoing surveying of the ground surface by United States Geological Survey provides a way to verify that its efforts in preventing subsidence are effective.

⁵ Alan Kropp & Associates, 2020, Existing Setting, Geologic Hazards, UC Berkeley – LRDP CMP EIR, Berkeley, California

⁶ Blackwell, E., M. Shirzaei, C. Ojha and S. Werth, 2020, Tracking California's sinking coast from space: Implications for relative sea-level rise, *Science Advances* Vol. 6, no. 31, <https://advances.sciencemag.org/content/6/31/eaba4551#:~:text=Subsidence%20occurs%20with%20rates%20exceeding,mm%2Fyear%20in%20Southern%20California,accessed December 18, 2020.>

Paleontological Setting

Paleontological resources are fossils—that is, organisms or fragments, impressions, or traces of organisms preserved in rock. The EIR Study Area is on the western slope of the East Bay hills and the flatlands adjacent to these hills. It is situated east of San Francisco Bay in the northern portion of the Coast Ranges Geomorphic Province. As noted earlier under “Regional Geology,” the hillside areas contain various sedimentary and volcanic bedrock units at the ground surface or at a shallow depth, and the areas downslope are on a broad alluvial plain. As shown on Figure 5.6-1, Geologic Map, the Hill Campus East is entirely within the bedrock area, and all the other LRDP zones of the EIR Study Area have a mixture of bedrock units (toward the northeast) and alluvial units (toward the southwest). The University of California Museum of Paleontology has records of over 30 fossil localities within a five-mile radius of the EIR Study Area, including 2 localities in the EIR Study Area. Besides illuminating the striking differences between California in the past and today, this abundant fossil record has been vital in studies of extinction, ecology, and climate change.

Housing Project #1

The Housing Project #1 site is a rectangular 0.92-acre site that is fully developed in a highly urbanized area of the City Environs Properties (see Figure 3-5, Housing Project #1 Site Aerial). The natural topography of the project site is flat.⁷ The site is currently occupied by residential apartments; the UC Berkeley shuttle garage; and former commercial rental space.

The Housing Project #1 site is likely to be underlain by 30 to 40 feet of relatively competent soils, and groundwater is likely to be present at a depth of 10 to 20 feet below ground surface. The Housing Project #1 site will not be subject to fault rupture or landslide hazards, and only expansive soil or liquefaction-settlement concerns are present. The only significant geologic hazard that will impact this site is strong ground shaking during a major earthquake.⁸

Housing Project #2

The Housing Project #2 site is in the City Environs Properties on the site currently known as People’s Park (see Figure 3-14, Housing Project #2 Site Aerial). It is a rectangular, 2.8-acre site in a highly urbanized area. The site has a 20-foot grade change from east to west in a constant slope. Current uses on-site include demonstration gardens; lawn space; a paved basketball court; a picnic area; a stage; and public restrooms. Trees are located throughout the site, primarily on the western and eastern edges, with open space in the middle.

⁷ Rockridge Geotechnical, Inc., 2020, Final Geotechnical Investigation, Proposed Student Housing Building, Helen Diller Anchor House, Walnut and University, Berkeley, California.

⁸ Rockridge Geotechnical, Inc., 2020, Final Geotechnical Investigation, Proposed Student Housing Building, Helen Diller Anchor House, Walnut and University, Berkeley, California.

The Housing Project #2 site is very similar to the Housing Project #1 site from a geotechnical/geologic perspective, and both share the same geologic hazard profile.⁹ The Housing Project #2 site is likely to be underlain by 50 to 60 feet of relatively competent soils, and groundwater is likely to be present at a depth of 10 to 20 feet below ground surface. The Housing Project #2 site is not subject to fault rupture or landslide hazards, and only minor expansive soil or liquefaction-settlement concerns are likely. The only significant geologic hazard that will likely impact this site is strong ground shaking during a major earthquake.

5.6.2 STANDARDS OF SIGNIFICANCE

Based on the preliminary analysis contained in the Notice of Preparation (see Appendix A, Notice of Preparation and Scoping Comments, of this Draft EIR), it was determined that development of the proposed project would not result in significant environmental impacts related to soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems because the proposed project would not include the use of septic tanks or alternative wastewater disposal systems. Therefore, this standard is not discussed further in this EIR.

The proposed project would result in a significant geological impact if it would:

1. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - a. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault.
 - b. Strong seismic ground shaking.
 - c. Seismic-related ground failure, including liquefaction.
 - d. Landslides.
2. Result in substantial soil erosion or the loss of topsoil.
3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.
5. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
6. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

⁹ Alan Kropp & Associates, 2020, Existing Setting, Geologic Hazards, UC Berkeley – LRDPCMP EIR, Berkeley, California.

5.6.3 IMPACT DISCUSSION

GEO-1	The proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: (i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault; (ii) Strong seismic ground shaking; (iii) Seismic-related ground failure, including liquefaction; (iv) Landslides.
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LRDP Update

The location of the EIR Study Area and its underlying geology make it likely to experience seismic hazards, including fault rupture, fault creep, strong seismic shaking, and secondary hazards, like liquefaction and seismic-related ground failure, including landslides.

Earthquake Faults

Section 5.6.1.2, Existing Conditions, describes how the Hayward Fault crosses the Hill Campus West and the Clark Kerr Campus. The Hayward Fault has shown evidence of surface creep on the site. During historical times, well-documented surface creep has occurred along the Hayward Fault at average rates of about 0.2 to 0.4 inches per year. However, variability in creep rates, both spatially along the fault trace and temporally, are present along the fault. As a result of the fault activity, an Earthquake Fault Zone (formerly called an Alquist-Priolo Special Study Zone) has been created along the fault, including through portions of the EIR Study Area. Studies for the Memorial Stadium retrofit project concluded that fault rupture might be about three to four feet horizontally and half to one foot vertically for an earthquake with a 10 percent probability of exceedance in 50 years. More recently, a characterization of the southern portion of the Hayward Fault estimated a surface rupture of 2.7 to 5.5 feet for an earthquake with a 10 percent probability of exceedance in 50 years. Applying probable increases for the northern section of the Hayward Fault (compared to the southern section) and for the magnitude increase from the connection to the Rodgers Creek Fault, it is believed these rupture magnitudes might be increased by approximately 50 percent.

Potential future development that implements the proposed LRDP Update would not create or exacerbate fault rupture because no development is proposed in the Earthquake Fault Zone. Mandatory compliance with the University of California Seismic Safety Policy and review by UC Berkeley's Seismic Review Committee would prevent any substantial adverse effects from fault rupture to any construction under the proposed LRDP Update, because new buildings would not be permitted in these areas, and thus not be constructed across the trace of an active fault. Impacts would be *less than significant*.

Earthquake Ground Shaking

During large earthquakes, strong ground shaking will be produced. To provide consistency in providing the design input across the Campus Park to mitigate ground shaking, the Site-Specific Seismic Hazard Analyses and Development of Seismic Design Ground Motions was developed for UC Berkeley and is routinely

updated as new data becomes available. The most recent update was in 2015 and provided both deterministic and probabilistic design information. The criteria provided in this series of reports have been used by incorporating the recommended response spectrums into the design of new structures on the Campus Park and the surrounding environs, using the most recent version of the seismic design input. Given the very high level of ground shaking during a major earthquake, ground shaking is a serious geologic hazard in the EIR Study Area and by far the most widespread.

As part of the proposed project, UC Berkeley and future development projects would implement the geology (GEO) CBPs listed here:

- **CBP GEO-1:** UC Berkeley will continue to comply with the California Building Code and the University of California Seismic Safety Policy.
- **CBP GEO-2:** Site-specific geotechnical studies will be conducted under the supervision of a California Registered Certified Engineering Geologist or licensed geotechnical engineer and UC Berkeley will incorporate recommendations for geotechnical hazard prevention and abatement into project design.
- **CBP GEO-3:** The UC Berkeley Seismic Review Committee will continue to review all seismic and structural engineering design for new and renovated existing buildings on campus.
- **CBP GEO-4:** UC Berkeley will continue to use site-specific seismic ground motions for analysis and design of campus projects. Site-specific ground motions provide more current geo-seismic data than the U.S. Geological Survey (USGS) and are used for performance-based analyses.
- **CBP GEO-5:** UC Berkeley will continue to comply with the UC Seismic Safety Policy. Through this program, UC Berkeley will continue to identify buildings in need of upgrades and include seismic improvements as part of its Capital Financial Plan.
- **CBP GEO-6:** UC Berkeley will continue to implement programs and projects in emergency planning, training, response, and recovery. Each campus Building Coordinator will prepare, and update as needed, building response plans and coordinate education and planning for all building occupants.
- **CBP GEO-7:** As stipulated in the UC Seismic Safety Policy, the design parameters for specific site peak acceleration and structural reinforcement will be determined by the geotechnical and structural engineer for each new or rehabilitation project proposed under the LRDP. The acceptable level of actual damage that could be sustained by specific structures will be calculated based on geotechnical information obtained at the specific building site.

CBP GEO-1 through CBP GEO-7 establish a series of actions and procedures that UC Berkeley and future development must comply with to reduce risks associated with seismic hazards, consistent with other existing federal, State, and UC regulations. The ongoing implementation of CBP GEO-1 through CBP GEO-7, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional geology and soils impacts. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Furthermore, mandatory compliance with the University of California Seismic Safety Policy with review from the Seismic Advisory Board and UC Berkeley's Seismic Review Committee, would ensure that existing structures and any construction under the proposed LRDP Update would not cause substantial adverse effects involving earthquake ground shaking.

Development under the proposed LRDP Update would not create or exacerbate earthquake ground shaking. Mandatory compliance with the University of California Seismic Safety Policy with review from the Seismic Advisory Board and Seismic Review Committee, along with mandatory compliance with CBP GEO-1 through GEO-7 referenced above, would ensure that existing structures and any potential future development that implements the proposed LRDP Update would not cause substantial adverse effects involving earthquake ground shaking by implementing design parameters to prevent such damage, identifying structures in need of seismic retrofitting, and compliance with applicable regulations designed to ensure seismic safety, and impacts would thus be *less than significant*.

Liquefaction and Related Ground Failure

Figure 5.6-4, Geologic Hazards, shows areas that may be susceptible to liquefaction according to analysis by the California Geologic Survey. The California Geologic Survey recommends a site-specific study for projects in the mapped areas. However, other than the site at 1608 4th Street (for which no data have been provided), the only possible areas that may be subject to liquefaction, according to Figure 5.6-4, Geologic Hazards, are the soils within Strawberry Creek and immediately uphill of Memorial Stadium. Under the proposed LRDP Update, those areas are either not in potential future building areas or would be designed in accordance with the University of California Seismic Safety Policy. To date, site-specific borings across the EIR Study Area have not identified the presence of any significant liquefiable deposits. Any future development within these potential liquefaction areas would be required to complete a site-specific study before construction that would identify any hazards, include recommended measures to reduce impacts, and otherwise comply with applicable regulations in compliance with CBP GEO-2. Therefore, liquefaction is not considered a significant hazard in the EIR Study Area, and the proposed LRDP Update would not exacerbate any existing or create new liquefaction hazards.

Lateral spreading occurs when liquefied soils are present near a free face (such as a stream channel), and the materials move in a horizontal fashion toward the open area. It is possible that localized lateral spreading could occur in the immediate vicinity of Strawberry Creek, but it is unlikely that ground movement would extend much beyond 10 feet from the top of the creek bank because no development is proposed in these areas.

Seismic densification can occur when loose soils above the level of the groundwater are subject to strong ground shaking and densify. Such loose soils are not common in any portions of the EIR Study Area, although a few local areas with some significant densification were identified in the site-specific reports that were reviewed. These areas included portions of Evans Diamond, Hellman Courts, and the field-hockey field on the Clark Kerr Campus.

Mandatory compliance with the University of California Seismic Safety Policy, review by the Seismic Review Committee, and compliance with CBPs GEO-1 through GEO-7 would ensure that existing structures and any

potential future development under the proposed LRDP Update would not cause substantial adverse effects involving liquefaction and related ground failure, and impacts would be *less than significant*.

Landslides

Small, localized slides could occur in the Strawberry Creek bank areas or the eastern edges of the Hill Campus West and the Clark Kerr Campus; there is a landslide that is impacting the bridge to Lawrence Berkeley National Laboratory over Centennial Drive. The major area that may be subject to landslides is the Hill Campus East. A portion of a landslide map of the Berkeley-Oakland area developed by the California Geologic Survey is presented on Figure 5.6-5, Landslide Map. This map shows a number of landslides in the Hill Campus East area, although nearly all are considered dormant. It should be noted that these landslides may fail in the future during large earthquakes, and Figure 5.6-4, Geologic Hazards, illustrates areas that the California Geologic Survey considers may be susceptible to earthquake-induced landslides on the Seismic Hazard Map of the area. California Geologic Survey recommends a site should be evaluated for such a hazard before development. This is a significant geologic hazard in the EIR Study Area, but it is only a concern in the Hill Campus East. Since no potential future building areas are in this landslide-prone area, the proposed LRDP Update would not exacerbate any existing landslide hazards or create new landslides.

As described in Chapter 3, Project Description, the proposed LRDP Update contains a principle and goals related to geology and soils, seeking to enhance the resilience of the UC Berkeley campus and manage risks. In addition, the proposed LRDP Update includes a relevant Hill Campus East Land Use objective related to geology and soils in its Land Use Element:

Prioritize improvements that address life-safety concerns, particularly open space, circulation, and landscape interventions related to wildfire, landslides, evacuation, and seismic safety.

As part of the proposed project, UC Berkeley and future development projects would implement the following geology (GEO) CBP:

CBP GEO-8: Site-specific geotechnical studies will include an assessment of landslide hazard, including seismic vibration and other factors contributing to slope stability.

CBP GEO-8 requires consideration of landslide-related hazards as part of project-geotechnical studies. The ongoing implementation of CBP GEO-8, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional landslide impacts. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

In addition, the proposed LRDP Update includes the following relevant objectives for resilience and emergency systems in the Infrastructure, Resilience, and Emergency Systems Element:

- Improve the seismic resilience of campus facilities through structural improvements and building replacements. Prioritize seismic improvements consistent with the *UC Seismic Safety Policy*, particularly improvements that support critical campus functions.

- Improve energy resilience of campus buildings critical to university operations, increase on-site solar power production and battery storage for back-up power, and use the central plant to supplement the campus power supply in emergencies.
- Continue to plan for emergency access and response to address major events (e.g. earthquake, fire, life safety) that impact campus facilities.

Mandatory compliance with the University of California Seismic Safety Policy and the CBC and review by the Seismic Review Committee and compliance with CBPs GEO-1 through GEO-8 would ensure that any construction under the proposed LRDP Update would not cause substantial adverse effects involving landslides, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

The location of the Housing Project #1 site would not be subject to fault rupture or landslide hazards, and only expansive soil and liquefaction-settlement concerns are present. The mandatory compliance with CBPs referenced above would minimize the potential effects associated with the presence of expansive and liquefaction-settlement-prone soils.¹⁰ Therefore, the proposed housing project would not have the potential to result in any impacts associated with these hazards. The only significant geologic hazard that would impact this site is strong ground shaking during a major earthquake; however, the project would not exacerbate this condition. Mandatory compliance with the University of California Seismic Safety Policy with review from UC Berkeley's Seismic Review Committee, along with compliance with CBP GEO-1 through GEO-7, would ensure that Housing Project #1 would be designed to withstand earthquake ground shaking so as to not cause substantial adverse effects, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The Housing Project #2 site is very similar to the Housing Project #1 site from a geotechnical/geologic perspective, and both share the same geologic hazard profile. The Housing Project #2 site would not be subject to fault rupture or landslide hazards, and only minor expansive soil or liquefaction-settlement concerns are likely to be present. The only significant geologic hazard that would likely impact this site is strong ground shaking during a major earthquake; however, the project would not exacerbate this condition.

As with Housing Project #1, mandatory compliance with the University of California Seismic Safety Policy and review by the Seismic Advisory Board and UC Berkeley's Seismic Review Committee would ensure that

¹⁰ Rockridge Geotechnical, Inc., 2020, Final Geotechnical Investigation, Proposed Student Housing Building, Helen Diller Anchor House, Walnut and University, Berkeley, California.

Housing Project #2 would be designed to withstand earthquake ground shaking so as to not cause substantial adverse effects, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

GEO-2	The proposed project would not result in substantial soil erosion or the loss of topsoil.
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LRDP Update

New development or redevelopment within the EIR Study Area and changes in land use could result in an increase in impervious surfaces. This in turn could result in an increase in stormwater runoff, higher peak discharges to drainage channels, the potential to cause erosion or siltation in drainage swales and streams, and potential loss of topsoil. Increases in tributary flows can exacerbate creek bank erosion or cause destabilizing channel incision.

As described in further detail in Chapter 5.9, Hydrology and Water Quality, of this Draft EIR, all projects under the proposed LRDP Update would be required to implement construction phase best management practices (BMPs) as well as post-construction site design, source control, and treatment control measures in accordance with permit requirements. Typical construction BMPs include silt fences, fiber rolls, catch basin inlet protection, water trucks, street sweeping, and stabilization of truck entrance/exits. Each new development or redevelopment project that disturbs one or more acre of land would also be required by the State Water Resources Control Board to develop and implement a Stormwater Pollution Prevention Plan to control discharges from construction sites, as described in the Campus Design Standards.

New projects are required to implement BMPs and low-impact development (LID) measures pursuant to the F.5.g post-construction measures in the Phase II Small MS4 Permit, which are expected to increase the potential for rainwater infiltration. Site design measures, source control measures, and LID treatment measures minimize the impact of impervious areas with pervious pavements, drainage to landscaped areas and bioretention areas, and the collection of rooftop runoff in cisterns or discharge to rain gardens. These measures also increase the potential for groundwater recharge, prevent the loss of topsoil, and reduce the potential for erosion and siltation. Site design measures include limits on clearing, grading, and soil compaction; minimizing impervious surfaces; conserving the natural areas of the site and topsoil as much as possible; complying with stream setback ordinances; and protecting slopes and channels from erosion. LID measures include the use of permeable pavements, directing runoff to pervious areas, and the construction of bioretention areas. The F.5.g requirements also include operation and maintenance procedures and an agreement to maintain any stormwater treatment and control facilities in perpetuity.

As part of the proposed project, UC Berkeley and future development projects would implement the following geology (GEO) CBP, which has been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

CBP GEO-9 (Updated): Campus construction projects must comply with the Campus Design Standards, which contain regulatory and other campus requirements for construction-phase and post-construction stormwater management.

CBP GEO-9 requires compliance with standards that reduce erosion. These standards include UC Berkeley Campus Design Standards including Section 01.57.13, Temporary Erosion and Sediment Control, which would prevent any construction-related erosion impacts by requiring that standard erosion control practices shall be implemented, such as minimizing the amount of exposed land at any time, keeping the period of exposure limited to the shortest practical timeframe, using temporary vegetation or mulch in areas where construction time lag prevents expedient permanent covering of exposed land, prohibiting unnecessary soil disturbance, and avoiding the grading of slopes greater than 25 percent. Larger construction projects would be required to prepare Stormwater Pollution Prevention Plans which require that BMPs preventing soil erosion be implemented, and Erosion and Sediment Control Plans which would prevent soil erosion and make every effort to make soil stabilization permanent post-construction. The ongoing implementation of CBP GEO-9, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional erosion impacts. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Construction projects may also be subject to stormwater master plans developed under the proposed LRDP Update. Stormwater master plans would outline drainage areas on a construction site and develop engineering solutions for the controlled detention and outflow of stormwater, which in turn reduces the potential for erosion. Compliance with this CBP and stormwater master plan requirements would therefore ensure that impacts relate to topsoil loss, erosion, and siltation from potential future development and redevelopment projects that implement the proposed LRDP Update would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

The entire Housing Project #1 site is covered with hardscape, beneath which is 30 to 40 feet of relatively competent soils. There is no topsoil at the project site and, consequently, effects on topsoil are not discussed further. The analysis below focuses on potential soil erosion impacts during construction and operation.

The Housing Project #1 site is in an urbanized part of the city of Berkeley and would be required to implement construction phase BMPs as well as post-construction site design, source-control, and treatment control measures in accordance with applicable permit requirements, such as LID measures, per the F.5.g post-construction measures in the Phase II Small MS4 Permit. Site design measures include limits on clearing, grading, and soil compaction; minimizing impervious surfaces; conserving the natural areas of the site and topsoil as much as possible; complying with stream setback ordinances; and protecting slopes and channels from erosion. LID measures include the use of permeable pavements, directing runoff to

pervious areas, and the construction of bioretention areas. The F.5.g requirements also include operation and maintenance procedures and an agreement to maintain any stormwater treatment and control facilities in perpetuity.

Furthermore, UC Berkeley would continue to require adherence to the Campus Design Standards through CBP GEO-9. Compliance with this CBP would ensure that potential erosion and siltation effects from Housing Project #1 would not cause substantial adverse effects involving erosion and the loss of topsoil, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The Housing Project #2 site is located in an urbanized part of the city of Berkeley and would be required to implement construction phase BMPs as well as post-construction site design, source control, and treatment control measures in accordance with applicable permit requirements. Typical construction BMPs are described previously under the “LRDP Update” impact discussion.

Like Housing Project #1, once constructed, the project would be subject to Provision F.5.g requirements. Compliance with these regional and local regulatory requirements would ensure that potential erosion and siltation effects from Housing Project #2 would not cause substantial adverse effects involving erosion and the loss of topsoil, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

GEO-3	The proposed project is not located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
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LRDP Update

The proposed LRDP Update would not substantially increase the amount of groundwater pumped from beneath the EIR Study Area and thus would not exacerbate any potential hazard from subsidence. The statutorily required sustainable groundwater management practices of the East Bay Municipal Water District would ensure that the impact of subsidence would be *less than significant*.

Settlement and collapse risks are likely to exist in areas with alluvial soils. Areas of large settlement can damage, or in extreme cases, destroy structures. The presence of compressible soils in the EIR Study Area represents a hazard to structures and people.

The CBC has been adopted by the University of California and requires that structures be designed to mitigate compressible soils. Methods that could be used to reduce the impact of compressible soils include in-situ densification, transferring the load to underlying noncompressible layers with piles, and over-

excavation of compressible soil and recompaction with engineered fill. These design measures, or a combination of them, would reduce the impact of compressible soils to *less than significant*.

As stated under impact discussion GEO-1, mandatory compliance with the University of California Seismic Safety Policy and the CBC, with review by the Seismic Advisory Board, would ensure that any construction under the proposed LRDP Update would not cause substantial adverse effects involving landslides and liquefaction, and related ground failure, including lateral spreading, and impacts would therefore be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

The Housing Project #1 site will not be subject to landslide hazards, and the probability of subsidence impacts is generally low due to the generally uniform vertical movement in the EIR Study Area.¹¹ Liquefaction and related ground failure, including lateral spreading, settlement, and collapse, would be avoided at Housing Project #1 through mandatory compliance with the CBC and the University of California Seismic Safety Policy, with review from the Seismic Review Committee, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The Housing Project #2 site is very similar to the Housing Project #1 site from a geotechnical/geologic perspective, and both share the same geologic hazard profile. The Housing Project #2 site will not be subject to landslide hazards, and the probability of subsidence impacts is generally low due to the generally uniform vertical movement in the EIR Study Area. Liquefaction and related ground failure, including lateral spreading, settlement, and collapse, would be avoided at Housing Project #2 through mandatory compliance with the CBC and the University of California Seismic Safety Policy, with review from the Seismic Advisory Board and Seismic Review Committee, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

¹¹ Rockridge Geotechnical, Inc., 2020, Final Geotechnical Investigation, Proposed Student Housing Building, Helen Diller Anchor House, Walnut and University, Berkeley, California.

GEO-4	The proposed project is not located on expansive soil, creating substantial direct or indirect risks to life or property.
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LRDP Update

The predominant soil type at the ground surface across all of the EIR Study Area is silty clay, often sandy and sometimes gravelly. Laboratory testing of soil samples from borings for geotechnical investigations indicates the clay is generally stiff to hard. Laboratory testing indicates the expansion potential of the clay soils vary from low to critically high. Therefore, development projects under the proposed LRDP Update would have the potential to expose people to hazards associated with expansive soils.

All projects pursuant to the proposed LRDP Update would be required to follow CBC procedures for evaluating the presence of expansive soils and employing strategies to minimize the risks of developing on expansive soils, and would also be required to comply with the CBPs that would require site-specific geotechnical studies to identify and recommend measures to reduce the impacts of expansive soil to less than significant. Methods that could be used to reduce the impact of expansive soils include drainage-control devices to limit water infiltration near foundations, over-excavation and recompaction of engineered fill method, or support of the foundation with piles. These project design measures, or a combination of them, would ensure that potential effects associated with development on expansive soils are *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

The Housing Project #1 site would be subject to expansive soil concerns,¹² but would also be required to follow the CBC requirements and the CBPs identified above for minimizing the potential effects associated with the presence of expansive soils, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The Housing Project #2 site would be subject to minor expansive soil concerns, but would also be required to follow the CBC requirements and the CBPs identified above for minimizing the potential effects of expansive soils, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

¹² Rockridge Geotechnical, Inc., 2020, Final Geotechnical Investigation, Proposed Student Housing Building, Helen Diller Anchor House, Walnut and University, Berkeley, California.

GEO-5	The proposed project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
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LRDP Update

As described in Section 5.6.1.2, Existing Conditions, the geologic processes in the EIR Study Area are generally the same as those in other parts of the Bay Area and are not considered unique. Therefore, impacts to unique geological features would be *less than significant*.

As discussed in Section 5.6.1.2, Existing Conditions, fossil localities have been found in the vicinity of the EIR Study Area. Highly sensitive geologic formations where fossils could potentially be found are shown on Figure 5.6-1, Geologic Map, by name and symbol and include the Franciscan Assemblage (KJfs and KJfm symbols), the Great Valley Sequence (Ku), Orinda Formation (Tor), Claremont Chert (Tcc), an unnamed mudstone, and older alluvium (Qpaf). Paleontological resources are recognized as nonrenewable and therefore receive protection under PRC Sections 5097.5 and 30244 and CEQA. Long-term implementation of the proposed LRDP Update could allow development (e.g., infill development, redevelopment, and revitalization/restoration), including grading, of known and unknown sensitive areas. Grading and construction activities of undeveloped areas or redevelopment that requires more intensive soil excavation than in the past could potentially disturb paleontological resources.

As part of the proposed project, UC Berkeley and future development projects would implement the geology (GEO) CBPs listed here, which has been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

CBP GEO-10 (Updated): In the event that a unique paleontological resource is identified during project planning or construction, the work will stop immediately, and the find will be protected until its significance can be determined by a qualified paleontologist. If the resource is determined to be a “unique resource,” a mitigation plan will be formulated pursuant to guidelines developed by the Society of Vertebrate Paleontology and implemented to appropriately protect the significance of the resource by preservation, documentation, and/or removal, prior to recommencing activities. The plan will be prepared by the qualified paleontologist and submitted to the UC Berkeley project manager for review and approval prior to initiation or commencement of construction activities in the area of effect.

Where areas of unknown sensitivity for paleontological resources are disturbed due to potential future development that implements the proposed LRDP Update, CBP GEO-10 establishes procedures to be followed in the event that a unique paleontological resource is discovered. The ongoing implementation of CBP GEO-10, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts to paleontological resources. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

Where areas of known sensitivity for paleontological resources are disturbed due to potential future development that implements the proposed LRDP Update, there is a high likelihood of discovering a paleontological resource. Accordingly, impacts would be *potentially significant*.

Impact GEO-5: Construction of new development or redevelopment within highly sensitive geologic formations would have the potential to adversely affect unique paleontological resources.

Mitigation Measure GEO-5: For ground-disturbing activities within highly sensitive geologic formations (i.e., Franciscan Assemblage, Great Valley Sequence, Orinda Formation, Claremont Chert, unnamed mudstone, or older alluvium, as shown on Figure 5.6-1, Geologic Map, of the 2021 LRDP Update EIR), if pre-construction testing does not take place, ground-disturbing activities shall implement the following measures. “Ground-disturbing activities” shall include soil removal, parcel grading, utility trenching, and foundation-related excavation in those areas that extend into previously undisturbed soils.

- UC Berkeley shall provide a paleontological resources awareness training program to all construction personnel active on the project site during earth moving activities. The first training will be provided prior to the initiation of ground disturbing activities by a qualified paleontologist. The program will include relevant information regarding fossils and fossil-bearing formations that may be encountered. The training will also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the project site.
- If any paleontological resources are encountered during ground-disturbing activities, the contractor shall ensure that activities in the immediate area of the find are halted and that UC Berkeley is informed. UC Berkeley shall retain a qualified paleontologist to evaluate the discovery and recommend appropriate treatment options pursuant to guidelines developed by the Society of Vertebrate Paleontology, including development and implementation of a paleontological resource impact mitigation program by a qualified paleontologist for treatment of the particular resource, if applicable. These measures may include, but not be limited to the following:
 - salvage of unearthed fossil remains and/or traces (e.g., tracks, trails, burrows);
 - screen washing to recover small specimens;
 - preparation of salvaged fossils to a point of being ready for curation (e.g., removal of enclosing matrix, stabilization and repair of specimens, and construction of reinforced support cradles); and
 - identification, cataloging, curation, and provision for repository storage of prepared fossil specimens.

Significance with Mitigation: Less than significant.

Housing Project #1

The subterranean parking garage for Housing Project #1 would extend approximately 30 feet below grade. The Housing Project #1 site has younger alluvium, likely to be 30 to 40 feet in depth. Since there is low potential for such a geologic unit to contain significant paleontological resources, the implementation of CPB GEO-10 would be required. CPB GEO-10 establishes procedures to be followed in the event that a unique paleontological resource is discovered. Accordingly, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The Housing Project #2 site has younger alluvium likely to be 50 to 60 feet in depth and there is low potential for such a geologic unit to contain significant paleontological resources. The project site has been developed with housing and other residential uses in the past, which also contributes to the low likelihood of unearthing a paleontological resource. Furthermore, there is no subterranean excavation proposed during the construction phase of the project. However, in the event that a paleontological resource is unearthed during the grading phase of the proposed project, like Housing Project #1, implementation of CBP GEO-10 would ensure its protection. Accordingly, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

GEO-6	The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to geology and soils.
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LRDP Update

The cumulative setting includes growth within the EIR Study Area, in combination with projected growth in the rest of Alameda County, Contra Costa County, and the surrounding region. As discussed previously, potential future development allowed by implementing the proposed project would not result in significant impacts related to geology and soils with implementation of Mitigation Measure GEO-5. Although the EIR Study Area includes some significant hazards—the Hayward Fault, strong ground shaking, and potential landslides in the Strawberry Creek bank areas, the eastern edges of the Hill Campus West, the Clark Kerr Campus, the bridge to Lawrence Berkeley National Laboratory over Centennial Drive, and the Hill Campus East—mandatory compliance with State and UC Berkeley regulations and the CBPs would ensure these impacts would be *less than significant*.

Cumulative development in adjacent jurisdictions would be subject to the same federal, State, and local regulations. Since impacts associated with geology and soils are by their nature focused on specific sites or areas, the less-than-significant impacts with implementation of Mitigation Measure GEO-5 within the EIR Study Area and on-site CBPs to avoid impacts to paleontological resources from the proposed project, would not contribute to a cumulative increase in hazards in the immediate vicinity of the EIR Study Area, or greater Alameda and Contra Costa Counties. Therefore, cumulative impacts associated with geology and soils would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. The cumulative setting includes growth within the EIR Study Area in combination with projected growth in the rest of Alameda County, Contra Costa County, and the surrounding region. As discussed previously,

development of Housing Projects #1 and #2 would not result in significant impacts from geology and soils. Although the EIR Study Area includes geologic hazards, as does much of California, mandatory compliance with State and UC Berkeley regulations and the CBP GEO-1 through CBP GEO-10 would reduce these impacts to *less than significant*.

Cumulative development in adjacent jurisdictions would be subject to the same federal, State, and local regulations. Since impacts associated with geology and soils are by their nature focused on specific sites or areas, the less-than-significant impacts in the EIR Study Area and on-site CBPs to avoid impacts to paleontological resources from the proposed project, Housing Projects #1 and #2 would not contribute to a cumulative increase in hazards in the immediate vicinity of the EIR Study Area or greater Alameda and Contra Costa Counties region.

Significance without Mitigation: Less than significant.

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5.7 GREENHOUSE GAS EMISSIONS

This chapter describes the potential greenhouse gas (GHG) emissions impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential greenhouse gas emission impacts, and identifies feasible mitigation measures that could mitigate any potentially significant impacts.

The GHG emissions modeling is included in Appendix C, Air Quality and Greenhouse Gas Emissions, of this Draft EIR:

- Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling
- Appendix C2, Housing Project #1 (Anchor House) Air Quality and Greenhouse Gas Modeling
- Appendix C3, Housing Project #2 (People's Park) Air Quality and Greenhouse Gas Modeling

Discussions regarding climate-related hazards, such as air quality, sea level rise, flooding, drought, and wildfires, are in Chapter 5.2, Air Quality; Chapter 5.5, Energy, Chapter 5.9, Hydrology and Water Quality; and Chapter 5.18, Wildfire, of this Draft EIR.

The following are definitions for terms used throughout this chapter.

- **Greenhouse gases (GHG).** Gases in the atmosphere that absorb infrared light, thereby retaining heat in the atmosphere and contributing to a greenhouse effect.
- **Global warming potential (GWP).** Metric used to describe how much heat a molecule of a GHG absorbs relative to a molecule of carbon dioxide (CO₂) over a given period of time (20, 100, and 500 years). CO₂ has a GWP of 1.
- **Carbon-dioxide equivalent (CO₂e).** The standard unit to measure the amount of GHGs in terms of the amount of CO₂ that would cause the same amount of warming. CO₂e is based on the GWP ratios between the various GHGs relative to CO₂.
- **Carbon neutrality.** The point at which the removal of carbon pollution from the atmosphere meets or exceeds emissions. Under a total carbon neutral target, all GHG emissions from all sources, are reduced to zero.
- **Compliance offsets.** This type of offset is specific to the California Air Resources Board's (CARB) Cap-and-Trade Program.
- **MTCO₂e.** Metric ton of CO₂e.
- **MMTCO₂e.** Million metric tons of CO₂e.
- **Voluntary carbon offsets.** The Voluntary Carbon Offset Program provides a market for the voluntary reduction, avoidable, or sequestration of CO₂e that exceeds current regulatory requirements.

5.7.1 ENVIRONMENTAL SETTING

5.7.1.1 GREENHOUSE GASES AND CLIMATE CHANGE

Human activities contribute to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. The primary source of GHGs is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHGs—water vapor, carbon dioxide (CO₂), methane (CH₄), and ozone (O₃)—that may cause an increase in global average temperatures. Other GHGs identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons.^{1,2,3} The major GHGs are briefly described as follows:

- **Carbon dioxide (CO₂)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH₄)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.
- **Nitrous oxide (N₂O)** is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

GHGs are dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Some GHGs have a stronger greenhouse effect than others. These are referred to as high GWP gases. The GWP of applicable GHG emissions are shown in Table 5.7-1, GHG Emissions and Their Relative Global Warming Potential Compared to CO₂. The GWP is used to convert GHGs to CO₂-equivalence (CO₂e) to show the relative potential that different GHGs have to contribute to the greenhouse effect. For example, under IPCC's Fifth Assessment Report (AR5) GWP values for CH₄, a project that generates 10 metric tons (MT) of CH₄ would be equivalent to 280 MT of CO₂.⁴

¹ Intergovernmental Panel on Climate Change, 2001, Third Assessment Report: Climate Change 2001, New York: Cambridge University Press.

² Water vapor (H₂O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant because it is considered part of the feedback loop of radiative forcing.

³ Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. Reducing black carbon emissions globally can have immediate economic, climate, and public health benefits. California has been an international leader in reducing emissions of black carbon, with close to 95 percent control expected by 2020 due to existing programs that target reducing PM from diesel engines and burning activities (California Air Resources Board, 2017, March 14. Short-Lived Climate Pollutant Reduction Strategy, <https://www.arb.ca.gov/cc/shortlived/shortlived.htm>). However, State and national GHG inventories do not include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

⁴ CO₂-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The global warming potential of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

TABLE 5.7-1 GHG EMISSIONS AND THEIR RELATIVE GLOBAL WARMING POTENTIAL COMPARED TO CO₂

GHGs	Fourth Assessment Report (AR4) Global Warming Potential Relative to CO ₂ ^a	Fifth Assessment Report (AR5) Global Warming Potential Relative to CO ₂ ^a
Carbon Dioxide (CO ₂)	1	1
Methane ^b (CH ₄)	25	28
Nitrous Oxide (N ₂ O)	298	265
Hydrofluorocarbons:		
HFC-134 a	1,430	1,300
R-401A		17.94
R-404A		3,943
R-408A		2,430
R-410A		1,924
R-438A		2,059

Notes:

a. Based on 100-year time horizon of the GWP of the air pollutant compared to CO₂.

b. The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO₂ is not included.

Source: Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change. New York: Cambridge University Press; and Intergovernmental Panel on Climate Change (IPCC). 2014. Fifth Assessment Report: Climate Change 2014. New York: Cambridge University Press.

California's GHG Sources and Relative Contribution

In 2020, the statewide GHG emissions inventory was updated for 2000 to 2018 emissions using the GWPs in IPCC's AR4.⁵ Based on these GWPs, California produced 425.3 MMTCO₂e GHG emissions in 2018. California's transportation sector was the single largest generator of GHG emissions, producing 39.9 percent of the state's total emissions. Industrial sector emissions made up 21.0 percent, and electric power generation made up 14.8 percent of the state's emissions inventory. Other major sectors of GHG emissions include commercial and residential (9.7 percent), agriculture and forestry (7.7 percent), high GWP (4.8 percent), and recycling and waste (2.1 percent).⁶

Since the peak level in 2004, California statewide GHG emissions dropped below the 2020 GHG limit of 431 MMTCO₂e in 2016 and have remained below the 2020 GHG limit since then. In 2018, emissions from routine GHG emitting activities statewide were 6 MMTCO₂e lower than the 2020 GHG limit. Per capita GHG

⁵ Methodology for determining the statewide GHG inventory is not the same as the methodology used to determine statewide GHG emissions under Assembly Bill 32 (2006).

⁶ California Air Resources Board (CARB). 2020, October 15. 2California Greenhouse Gas Inventory for 2000-2018: By Category as Defined in the 2008 Scoping Plan. <https://ww2.arb.ca.gov/ghg-inventory-data>

emissions in California have dropped from a 2001 peak of 14.0 MTCO₂e per person to 10.7 MTCO₂e per person in 2018, a 24 percent decrease. Transportation emissions decreased in 2018 compared to the previous year, which is the first year-over-year decrease since 2013. Since 2008, California's electricity sector has followed an overall downward trend in emissions. In 2018, solar power generation has continued its rapid growth since 2013. Emissions from high-GWP gases increased 2.3 percent in 2018 (2000–2018 average year-over-year increase is 6.8 percent), continuing the increasing trend as they replace ozone-depleting substances being phased out under the 1987 Montreal Protocol. Overall trends in the inventory also demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product [GDP]) is declining, representing a 43 percent decline since the 2001 peak, while the state's GDP has grown 59 percent during this period.⁷

Human Influence on Climate Change

For approximately 1,000 years before the Industrial Revolution, the amount of GHGs in the atmosphere remained relatively constant. During the 20th century, however, scientists observed a rapid change in the climate and the quantity of climate change pollutants in the Earth's atmosphere that is attributable to human activities. The amount of CO₂ in the atmosphere has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million per year since 1960, mainly due to combustion of fossil fuels and deforestation.⁸ These recent changes in the quantity and concentration of climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants.⁹ In the past, gradual changes in temperature changed the distribution of species, availability of water, etc. However, human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame but in a human's lifetime.¹⁰

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are hard to predict. Projections of climate change depend heavily upon future human activity. Therefore, climate models are based on different emission scenarios that account for historical trends in emissions and on observations of the climate record that assess the human influence of the trend and projections for extreme weather events. Climate-change scenarios are affected by varying degrees of uncertainty, for example, on the magnitude of the trends for:

- Warmer and fewer cold days and nights over most land areas.
- Warmer and more frequent hot days and nights over most land areas.
- An increase in frequency of warm spells/heat waves over most land areas.

⁷ California Air Resources Board. 2020, October 15. California Greenhouse Emissions for 2000 to 2018: Trends of Emissions and Other Indicators. https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf

⁸ Intergovernmental Panel on Climate Change, 2007. Fourth Assessment Report: Climate Change 2007, New York: Cambridge University Press.

⁹ California Climate Action Team, 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature.

¹⁰ Intergovernmental Panel on Climate Change, 2007. Fourth Assessment Report: Climate Change 2007, New York: Cambridge University Press.

- An increase in frequency of heavy precipitation events (or proportion of total rainfall from heavy falls) over most areas.
- Larger areas affected by drought.
- Intense tropical cyclone activity increases.
- Increased incidence of extreme high sea level (excluding tsunamis).

Potential Climate Change Impacts for California

Observed changes over the last several decades across the western United States reveal clear signs of climate change. Statewide average temperatures increased by about 1.7 degrees Fahrenheit (°F) from 1895 to 2011, and warming has been greatest in the Sierra Nevada.¹¹ The years from 2014 through 2016 have shown unprecedented temperatures, with 2014 being the warmest.¹² By 2050, California is projected to warm by approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century. By 2100, average temperatures could increase by 4.1 to 8.6°F, depending on emissions levels.¹³

In California and western North America, observations of the climate have shown: 1) a trend toward warmer winter and spring temperatures; 2) a smaller fraction of precipitation falling as snow; 3) a decrease in the amount of spring snow accumulation in the lower and middle elevation mountain zones; 4) advanced shift in the timing of snowmelt of 5 to 30 days earlier in the spring; and 5) a similar shift (5 to 30 days earlier) in the timing of spring flower blooms.¹⁴ Overall, California has become drier over time, with five of the eight years of severe to extreme drought occurring between 2007 and 2016, and unprecedented dry years in 2014 and 2015. Statewide precipitation has become increasingly variable from year to year, with the driest consecutive four years occurring from 2012 to 2015.¹⁵

According to the California Climate Action Team—a committee of State agency secretaries and the heads of agencies, boards, and departments, led by the Secretary of the California Environmental Protection Agency—even if actions could be taken to immediately curtail climate change emissions, the potency of emissions that have already built up, their long atmospheric lifetimes (see Table 5.7-1, GHG Emissions and Their Relative Global Warming Potential Compared to CO₂), and the inertia of the Earth's climate system could produce as much as 0.6 degrees Celsius (°C) (1.1°F) of additional warming. Consequently, some impacts from climate change are now considered unavoidable. Global climate change risks to California are listed below and shown in Table 5.7-2, Summary of GHG Emissions Risk to California.

¹¹ California Climate Change Center, 2012. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California.

¹² Office of Environmental Health Hazards Assessment, 2018. Indicators of Climate Change in California. <https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf>, accessed November 21, 2019.

¹³ California Climate Change Center, 2012. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California.

¹⁴ California Climate Action Team, 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature.

¹⁵ Office of Environmental Health Hazards Assessment, 2018. Indicators of Climate Change in California. <https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf>, accessed April 3, 2019.

TABLE 5.7-2 SUMMARY OF GHG EMISSIONS RISK TO CALIFORNIA

Impact Category	Potential Risks
Public Health Impacts	Heat waves will be more frequent, hotter, and longer Poor air quality made worse Higher temperatures increase ground-level ozone (i.e., smog) levels
Water Resource Impacts	Decreasing Sierra Nevada snow pack Challenges in securing adequate water supply Potential reduction in hydropower Loss of winter recreation
Agricultural Impacts	Increasing temperature Increasing threats from pests and pathogens Expanded ranges of agricultural weeds Declining productivity Irregular blooms and harvests
Coastal Sea Level Impacts	Accelerated sea level rise Increasing coastal floods Shrinking beaches Worsened impacts on infrastructure
Forest and Biological Resource Impacts	Increased risk and severity of wildfires Lengthening of the wildfire season Movement of forest areas Conversion of forest to grassland Declining forest productivity Increasing threats from pest and pathogens Shifting vegetation and species distribution Altered timing of migration and mating habits Loss of sensitive or slow-moving species
Energy Demand Impacts	Potential reduction in hydropower Increased energy demand

Sources: California Climate Change Center, 2012, Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California; California Energy Commission, 2006, Our Changing Climate: Assessing the Risks to California, 2006 Biennial Report, CEC-500-2006-077; California Energy Commission, 2009, The Future Is Now: An Update on Climate Change Science, Impacts, and Response Options for California. CEC-500-2008-0077; and California Natural Resources Agency, 2014, Safeguarding California: Reducing Climate Risk, An Update to the 2009 California Climate Adaptation Strategy.

- Water Resources Impacts.** By late this century, all projections show drying, and half of the projections suggest 30-year average precipitation will decline by more than 10 percent below the historical average. Even in projections with relatively little or no decline in precipitation, central and southern parts of the state are expected to be drier from the warming effects alone because the spring snowpack will melt sooner, and the moisture in soils will evaporate during long dry summer months.¹⁶

¹⁶ California Council on Science and Technology, 2012. California's Energy Future: Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets. <https://ccst.us/wp-content/uploads/2012ghg.pdf>, accessed November 21, 2019.

- **Wildfire Risks.** Earlier snowmelt, higher temperatures, and longer dry periods over a longer fire season will directly increase wildfire risk. Indirectly, wildfire risk will also be influenced by potential climate-related changes in vegetation and ignition potential from lightning. Human activities will continue to be the biggest factor in ignition risk. The number of large fires statewide is estimated to increase by 58 percent to 128 percent above historical levels by 2085. Under the same emissions scenario, estimated burned area will increase by 57 percent to 169 percent, depending on location.¹⁷
- **Sea Level Rise.** Sea level rise threatens existing or planned infrastructure, development, and ecosystems (wetlands, estuaries, and fisheries) along California's coast. Critical infrastructure lies less than four feet above the high tide, including two international airports—Oakland and San Francisco — and about 172,000 homes.¹⁸ Thermal expansion of ocean waters and melting glaciers have contributed to the rise in global mean sea level by seven inches. Along the California coast, sea levels have generally risen. Since 1900, mean sea level has increased by about seven inches at San Francisco and by about six inches since 1924 at La Jolla. In contrast, sea level at Crescent City has declined by about three inches since 1933 due to an uplift of the land surface from the movement of the Earth's plates.¹⁹
- **Health Impacts.** Many of the gravest threats to public health in California stem from the increase of extreme conditions, principally more frequent, more intense, and longer heat waves. Particular concern centers on the increasing tendency for multiple hot days in succession, and simultaneous heat waves in several regions throughout the state. Public health could also be affected by climate change impacts on air quality, food production, the amount and quality of water supplies, energy pricing and availability, and the spread of infectious diseases. Higher temperatures also increase ground-level ozone levels. Furthermore, wildfires can increase particulate air pollution in the major air basins of California.²⁰
- **Increased Energy Demand.** Increases in average temperature and higher frequency of extreme heat events combined with new residential development across the state will drive up the demand for cooling in the increasingly hot and longer summer season and decrease demand for heating in the cooler season. Warmer, drier summers also increase system losses at natural gas plants (reduced efficiency in the electricity generation process at higher temperatures) and hydropower plants (lower reservoir levels). Transmission of electricity will also be affected by climate change. Transmission lines lose 7 percent to 8 percent of transmitting capacity in high temperatures while needing to transport greater loads. This means that more electricity needs to be produced to make up for the loss in capacity and the growing demand.²¹

¹⁷ California Council on Science and Technology, 2012. California's Energy Future: Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets. <https://ccst.us/wp-content/uploads/2012ghg.pdf>, accessed November 21, 2019.

¹⁸ Office of Environmental Health Hazards Assessment, 2018. Indicators of Climate Change in California. <https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf>, accessed April 3, 2019.

¹⁹ Office of Environmental Health Hazards Assessment, 2018. Indicators of Climate Change in California. <https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf>, accessed April 3, 2019.

²⁰ California Council on Science and Technology, 2012. California's Energy Future: Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets. <https://ccst.us/wp-content/uploads/2012ghg.pdf>, accessed November 21, 2019.

²¹ California Council on Science and Technology, 2012. California's Energy Future: Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets. <https://ccst.us/wp-content/uploads/2012ghg.pdf>, accessed November 21, 2019.

5.7.1.2 REGULATORY FRAMEWORK

This section summarizes key federal, state, regional, and local regulations and programs related to GHG emissions resulting from the proposed project. As stated in Chapter 3, Project Description, of this Draft EIR, UC Berkeley, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by UC Berkeley that are in furtherance of UC Berkeley's educational purposes. However, for coordination purposes, UC Berkeley may consider aspects of local plans and policies for the communities surrounding the campus when it is appropriate and feasible.

Federal

The U.S. Environmental Protection Agency (USEPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The USEPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings did not themselves impose any emission reduction requirements but allowed the USEPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.²²

To regulate GHGs from passenger vehicles, the USEPA issued an endangerment finding.²³ The finding identifies emissions of six key GHGs—CO₂, CH₄, N₂O, HCFCs, PFCs, and SF₆—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world. The first three are applicable to the proposed project's GHG emissions inventory because they constitute the majority of GHG emissions and, per Bay Area Air Quality Management District (BAAQMD) guidance, they are the GHG emissions that should be evaluated as part of a project's GHG emissions inventory.

- **US Mandatory Report Rule for Greenhouse Gases (2009).** In response to the endangerment finding, the USEPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 metric tons (MT) or more of CO₂e per year are required to submit an annual report.
- **Update to Corporate Average Fuel Economy Standards (2021 to 2026).** The federal government issued new Corporate Average Fuel Economy (CAFE) standards in 2012 for model years 2017 to 2025, which required a fleet average of 54.5 miles per gallon in 2025. However, on March 30, 2020, the USEPA finalized an updated CAFE and GHG emissions standards for passenger cars and light trucks and established new, less stringent standards covering model years 2021 through 2026, known as The Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021-2026. However, a consortium of automakers and California have agreed on a voluntary framework to reduce emissions that can serve as an alternative path forward for clean vehicle standards nationwide. Automakers who agreed to the

²² US Environmental Protection Agency (USEPA). 2009, December. USEPA: Greenhouse Gases Threaten Public Health and the Environment. Science overwhelmingly shows greenhouse gas concentrations at unprecedented levels due to human activity. https://archive.epa.gov/epapages/newsroom_archive/newsreleases/o8d11a451131bca585257685005bf252.html.

²³ U.S. Environmental Protection Agency (USEPA), 2009. USEPA: Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act. <https://www.epa.gov/ghgemissions/endangerment-and-cause-or-contribute-findings-greenhouse-gases-under-section-202a-clean>, accessed November 21, 2019.

framework are Ford, Honda, BMW of North America, and Volkswagen Group of America. In late 2020, GM and Nissan also agreed to the voluntary framework. The framework supports continued annual reductions of vehicle greenhouse gas emissions through the 2026 model year, encourages innovation to accelerate the transition to electric vehicles, and gives industry the certainty needed to make investments and create jobs. This commitment means that the auto companies party to the voluntary agreement will only sell cars in the United States that meet these standards.²⁴

- **USEPA Regulation of Stationary Sources under the Clean Air Act (Ongoing).** Pursuant to its authority under the Clean Air Act, the USEPA has been developing regulations for new, large stationary sources of emissions such as power plants and refineries. Under former President Obama's 2013 Climate Action Plan, the USEPA was directed to develop regulations for existing stationary sources as well. On June 19, 2019, the USEPA issued the final Affordable Clean Energy (ACE) rule, which became effective on August 19, 2019 following the Energy Independence Executive Order. It officially rescinds the Clean Power Plan rule issued during the previous administration and sets emissions guidelines for states in developing plans to limit CO₂ emissions from coal-fired power plants.

State

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Order S-03-05, AB 32, SB 32, Executive Order B-30-15, Executive Order N-79-20, and SB 375. The major GHG regulations listed above are summarized as follows:

Executive Order S-03-05

Executive Order S-03-05, signed June 1, 2005, set the following GHG reduction targets for the state:

- 2000 levels by 2010.
- 1990 levels by 2020.
- 80 percent below 1990 levels by 2050.

Assembly Bill 32

Also known as the Global Warming Solutions Act, AB 32 was signed August 31, 2006, in order to reduce California's contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-03-05.

CARB 2008 Scoping Plan. The first Scoping Plan was adopted by CARB on December 11, 2008. The 2008 Scoping Plan identified that GHG emissions in California are anticipated to be 596 MMTCO₂e in 2020. In December 2007, CARB approved a 2020 emissions limit of 427 MMTCO₂e (471 million tons) for the state.²⁵ To effectively implement the emissions cap, AB 32 directed CARB to establish a mandatory reporting system to track and monitor GHG emissions levels for large stationary sources that generate more than

²⁴ California Air Resources Board (CARB) 2019, July 25. California and major automakers reach groundbreaking framework agreement on clean emission standards. Accessed April 14, 2020. <https://ww2.arb.ca.gov/news/california-and-major-automakers-reach-groundbreaking-framework-agreement-clean-emission>

²⁵ CARB. 2008. 2008 Climate Change Scoping Plan.

25,000 MTCO₂e per year, prepare a plan demonstrating how the 2020 deadline can be met, and develop appropriate regulations and programs to implement the plan by 2012.

Cap and Trade. In 2011, CARB adopted a statewide cap-and-trade regulation—a key component of the 2008 Scoping Plan—covering sources of GHG emissions that emit more than 25,000 metric tons of CO₂ equivalent (CO₂e) per year. The covered sources are refineries, power plants, industrial facilities, and transportation fuels. The cap-and-trade program includes an enforceable statewide emissions cap that declines approximately 3 percent annually. CARB distributes allowances, which are tradable permits, equal to the emissions allowed under the cap. Sources that reduce emissions more than their limits can auction carbon allowances to other covered entities through the cap-and-trade market. Sources subject to the cap are required to surrender allowances and offsets equal to their emissions at the end of each compliance period. The cap-and-trade program took effect in early 2012 with the enforceable compliance obligation beginning January 1, 2013. The cap-and-trade program was initially slated to sunset in 2020, but the passage of SB 398 in 2017 extended the program through 2030. UC Berkeley is subject to cap-and-trade regulation. Through an agreement with CARB, all subject UC campuses, including UC Berkeley, receive some allowances in exchange for a financial commitment to combat climate change. UC Berkeley acquires California carbon offsets (compliance offsets) to offset up to 8 percent through 2020²⁶ (i.e., the maximum allowed in the cap-and-trade program) of cap-and-trade subject emissions, which for UC Berkeley are emissions associated primarily with the cogeneration plant.

First Update to the Scoping Plan (2013). CARB completed a five-year update to the 2008 Scoping Plan, as required by AB 32. The First Update to the Scoping Plan, adopted at the May 22, 2014, board hearing, highlights California’s progress toward meeting the near-term 2020 GHG emission reduction goals defined in the 2008 Scoping Plan. As part of the update, CARB recalculated the 1990 GHG emission levels with the updated AR4 GWPs, and the 427 MMTCO₂e 1990 emissions level and 2020 GHG emissions limit, established in response to AB 32, are slightly higher at 431 MMTCO₂e.²⁷ As identified in the Update to the Scoping Plan, California is on track to meeting the goals of AB 32. However, the update also addresses the State’s longer-term GHG goals in a post-2020 element. The post-2020 element provides a high-level view of a long-term strategy for meeting the 2050 GHG goals, including a recommendation for the State to adopt a midterm target. According to the Update to the Scoping Plan, local government reduction targets should chart a reduction trajectory that is consistent with or exceeds the trajectory created by statewide goals.²⁸ CARB identified that reducing emissions to 80 percent below 1990 levels will require a fundamental shift to efficient, clean energy in every sector of the economy. Progressing toward California’s 2050 climate targets

²⁶The Cap and Trade compliance offset program limits compliance offsets to no more of 4 percent of their compliance obligation for emissions from 2021-2025; and 6 percent for emissions from 2026-2030. Starting with 2021 emissions, no more than one half of the quantitative usage limit may be sourced from projects that do not provide direct environmental benefits in the state (DEBS).

²⁷ California Air Resources Board, 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006.

²⁸ California Air Resources Board, 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006.

will require significant acceleration of GHG reduction rates. Emissions from 2020 to 2050 will have to decline several times faster than the rate needed to reach the 2020 emissions limit.²⁹

Executive Order B-30-15

Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions within the state to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the state and requires State agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in Executive Order S-03-05. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, Safeguarding California, in order to ensure climate change is accounted for in State planning and investment decisions.

Senate Bill 32 and Assembly Bill 197

In September 2016, SB 32 and AB 197 were signed into law, making the Executive Order goal for year 2030 into a statewide mandated legislative target. AB 197 established a joint legislative committee on climate change policies and requires the CARB to prioritize direct emissions reductions rather than the market-based cap-and-trade program for large stationary, mobile, and other sources. Executive Order B-30-15 and SB 32 required CARB to prepare another update to the Scoping Plan to address the 2030 target for the state.

On December 14, 2017, CARB adopted the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan) to address the 2030 target for the State. The 2017 Scoping Plan establishes a new emissions limit of 260 MMTCO₂e for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030.³⁰

California's climate strategy will require contributions from all sectors of the economy, including enhanced focus on zero- and near-zero emission vehicle technologies; continued investment in renewables, such as solar roofs, wind, and other types of distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (i.e., methane, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for GHG reductions at stationary sources complement local air pollution control efforts by the local air districts to tighten criteria air pollutants and toxic air contaminants emissions limits on a broad spectrum of industrial sources. Major elements of the 2017 Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero emission vehicle buses and trucks.
- Low Carbon Fuel Standards, with an increased stringency (18 percent by 2030).

²⁹ California Air Resources Board, 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006.

³⁰ California Air Resources Board, 2017, California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf, accessed on March 18, 2019.

- Implementation of SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deploys zero emissions vehicle trucks.
- Implementing the proposed Short-Lived Climate Strategy, which focuses on reducing methane and hydrofluorocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

In addition to these statewide strategies, the 2017 Scoping Plan also identified local governments as essential partners in achieving the State's long-term GHG reduction goals and identified local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends statewide targets of no more than 6 MTCO₂e or less per capita by 2030 and 2 MTCO₂e or less per capita by 2050. CARB recommends that local governments evaluate and adopt robust and quantitative locally appropriate goals that align with the statewide per capita targets and the State's sustainable development objectives and develop plans to achieve the local goals. The statewide per capita goals were developed by applying the percentage reductions necessary to reach the 2030 and 2050 climate goals (i.e., 40 percent and 80 percent, respectively) to the State's 1990 emissions limit established under AB 32. For CEQA projects, CARB states that lead agencies have the discretion to develop evidenced-based numeric thresholds (mass emissions, per capita, or per service population)—consistent with the Scoping Plan and the State's long-term GHG goals. To the degree a project relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from vehicle miles traveled (VMT), and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits. Where further project design or regional investments are infeasible or not proven to be effective, CARB recommends mitigating potential GHG impacts through purchasing and retiring carbon credits.

The Scoping Plan scenario is set against what is called the business-as-usual (BAU) yardstick—that is, what the GHG emissions would look like if the State did nothing at all beyond the existing policies that are required and already in place to achieve the 2020 limit, as shown in Table 5.7-3, 2017 Climate Change Scoping Plan Emissions Reductions Gap to Achieve the 2030 GHG Target. It includes the existing renewables requirements, advanced clean cars, the "10 percent" Low Carbon Fuel Standard, and the SB 375 program for more vibrant communities, among others. However, it does not include a range of new policies or measures that have been developed or put into statute over the past two years. Also shown in the table, the known commitments are expected to result in emissions that are 60 MMTCO₂e above the target in 2030. If the estimated GHG reductions from the known commitments are not realized due to delays in implementation or technology deployment, the post-2020 Cap-and-Trade Program would deliver the additional GHG reductions in the sectors it covers to ensure the 2030 target is achieved.

TABLE 5.7-3 2017 CLIMATE CHANGE SCOPING PLAN EMISSIONS REDUCTIONS GAP TO ACHIEVE THE 2030 GHG TARGET

Modeling Scenario	2030 GHG Emissions MMTCO ₂ e
Reference Scenario (Business-as-Usual)	389
With Known Commitments	320
2030 GHG Target	260
Gap to 2030 Target with Known Commitments	60

Source: California Air Resources Board, 2017. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf, accessed on March 18, 2019.

Table 5.7-4, 2017 Climate Change Scoping Plan Emissions by Sector to Achieve the 2030 GHG Target, provides estimated GHG emissions by sector, compared to 1990 levels, and the range of GHG emissions for each sector estimated for 2030.

TABLE 5.7-4 2017 CLIMATE CHANGE SCOPING PLAN EMISSIONS BY SECTOR TO ACHIEVE THE 2030 GHG TARGET

Scoping Plan Sector	1990 MMTCO ₂ e	2030 Proposed Plan Ranges MMTCO ₂ e	% Change from 1990
Agricultural	26	24-25	-8% to -4%
Residential and Commercial	44	38-40	-14% to -9%
Electric Power	108	30-53	-72% to -51%
High GWP	3	8-11	267% to 367%
Industrial	98	83-90	-15% to -8%
Recycling and Waste	7	8-9	14% to 29%
Transportation (including TCU)	152	103-111	-32% to -27%
Net Sink ^a	-7	TBD	TBD
Sub Total	431	294-339	-32% to -21%
Cap-and-Trade Program	NA	34-79	NA
Total	431	260	-40%

Notes: TCU = Transportation, Communications, and Utilities; TBD = To Be Determined.

a. Work is underway through 2017 to estimate the range of potential sequestration benefits from the natural and working lands sector.

Source: California Air Resources Board, 2017, California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf, accessed on March 18, 2019.

Executive Order B-55-18

Executive Order B-55-18, signed September 10, 2018, sets a goal “to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter.” Executive Order B-55-18 directs CARB to work with relevant state agencies to ensure future Scoping Plans identify and

recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions should be offset by equivalent net removals of CO₂e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

Executive Order N-79-20

On September 23, 2020, Executive Order N-79-20 was signed by the Governor, which identifies a goal that 100 percent of in-state sales of new passenger cars and trucks will be zero emission by 2035. Additionally, this Executive Order identified fleet goals for trucks—that 100 percent of drayage trucks be zero emissions by 2035 and 100 percent of medium- and heavy-duty vehicles in the state be zero emission by 2045, for all operations where feasible. Additionally, the Executive Order identifies a goal for the State to transition to 100 percent zero-emission off-road vehicles and equipment by 2035 where feasible.

Senate Bill 375

In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPO). The Metropolitan Transportation Commission (MTC) is the MPO for the nine-county San Francisco Bay area. Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

Update to the SB 375 Targets. CARB is required to update the targets for the MPOs every eight years and adopted revised SB 375 targets for the MPOs in March 2018.³¹ The updated targets became effective on October 1, 2018. The targets consider the need to further reduce VMT, as identified in the 2017 Scoping Plan Update (for SB 32) while balancing the need for additional and more flexible revenue sources to incentivize positive planning and action toward sustainable communities. Like the 2010 targets, the updated SB 375 targets are in units of percent per capita reduction in GHG emissions from automobiles and light trucks relative to 2005; this excludes reductions anticipated from implementation of state technology and fuels strategies and any potential future state strategies, such as statewide road user pricing. The proposed targets call for greater per-capita GHG emission reductions from SB 375 than are currently in place, which for 2035 translate into proposed targets that either match or exceed the emission reduction levels in the MPOs' currently adopted SCS to achieve the SB 375 targets. For the next SCS update, CARB's updated targets for the MTC/ABAG region are a 10 percent per capita GHG reduction in 2020 from 2005 levels

³¹ California Air Resources Board, 2018, Updated Final Staff Report: Proposed Update to the SB 375 Greenhouse Gas Emissions Reduction Targets.

(compared to 7 percent under the 2010 target) and a 19 percent per capita GHG reduction in 2035 from 2005 levels (compared to the 2010 target of 15 percent). CARB foresees that the additional GHG emissions reductions in 2035 may be achieved from land use changes, transportation investment, and technology strategies.³²

Other Regulations that Affect GHG Emissions

Table 5.7-5, List of Other Applicable State GHG Regulations, provides a summary list of other regulations adopted in California that reduce GHG emissions.

TABLE 5.7-5 LIST OF OTHER APPLICABLE STATE GHG REGULATIONS

Sector	Regulations	
Transportation	AB 1493	AB 1493 (Pavley I) Reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016.
	Executive Order S-01-07	Established declining LCFS for transportation fuels sold in the state. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applies to refiners, blenders, producers, and importers of transportation fuels, and would use market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods
	Executive Order B-16-2012	Established benchmarks to accommodate zero-emissions vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). The executive order also directed the number of zero-emissions vehicles in California's state vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are ZE by 2015 and at least 25 percent by 2020. The executive order also established a target for the transportation sector of reducing GHG emissions 80 percent below 1990 levels by 2020.
Renewable Energy	SB 107, SB X1-2, Executive Order S-14-08,	Renewables Portfolio Standard. Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S-14-08, signed in November 2008, expanded the state's renewable energy standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2).
	SB 350	Established tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures.
	SB 100	RPS for publicly owned facilities and retail sellers will consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the bill establishes an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

³² California Air Resources Board, 2018, Updated Final Staff Report: Proposed Update to the SB 375 Greenhouse Gas Emissions Reduction Targets.

TABLE 5.7-5 LIST OF OTHER APPLICABLE STATE GHG REGULATIONS

Sector	Regulations
Energy Efficiency	<p>Title 24, Part 6, Building Energy Efficiency Standards</p> <p>Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 and most recently revised in 2019 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Building Energy Efficiency Standards, which were adopted on May 9, 2018, went into effect starting January 1, 2020.</p>
	<p>Title 24, Part 11, Green Building Standards Code (CALGreen)</p> <p>On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The mandatory provisions of CALGreen became effective January 1, 2011, and were last updated in 2019. The 2019 CALGreen standards became effective January 1, 2020.</p>
	<p>Title 20, Appliance Efficiency Regulations</p> <p>The 2006 Appliance Efficiency Regulations (20 CCR §§ 1601–1608) were adopted by the CEC on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non-federally regulated appliances. Though these regulations are now often viewed as "business as usual," they exceed the standards imposed by all other states, and they reduce GHG emissions by reducing energy demand.</p>
Solid Waste	<p>AB 939</p> <p>California's Integrated Waste Management Act of 1989, AB 939 (Public Resources Code §§ 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.</p>
	<p>AB 341</p> <p>AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multifamily residential land uses. Section 5.408 of CALGreen also requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.</p>
	<p>AB 1327</p> <p>The California Solid Waste Reuse and Recycling Access Act, AB 1327 (Public Resources Code §§ 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The act required the California Integrated Waste Management Board to develop a model ordinance for adoption by any local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own.</p>
	<p>AB 1826</p> <p>In October of 2014, Governor Brown signed AB 1826 requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses and multifamily residential dwellings with five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed with food waste.</p>

TABLE 5.7-5 LIST OF OTHER APPLICABLE STATE GHG REGULATIONS

Sector	Regulations
Water	<p>The 20x2020 Water Conservation Plan was issued by the Department of Water Resources (DWR) in 2010 pursuant to Senate Bill 7, which was adopted during the 7th Extraordinary Session of 2009–2010 and therefore dubbed “SBX7-7.” SBX7-7 mandated urban water conservation and authorized the DWR to prepare a plan implementing urban water conservation requirements (20x2020 Water Conservation Plan). In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 required urban water providers to adopt a water conservation target of 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.</p>
	<p>The Water Conservation in Landscaping Act of 2006, AB 1881 requires local agencies to adopt the updated DWR model ordinance or an equivalent. AB 1881 also requires the CEC to consult with the DWR to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.</p>
Short-Lived Climate Pollutants	<p>On September 19, 2016, the governor signed SB 1383 to supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and methane (CH₄). Black carbon is the light-absorbing component of fine particulate matter produced during incomplete combustion of fuels. SB 1383 required the state board, no later than January 1, 2018, to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The bill also established targets for reducing organic waste in landfills. On March 14, 2017, CARB adopted the Short-Lived Climate Pollutant Reduction Strategy, which identifies the state’s approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes. According to CARB, ambient levels of black carbon in California are 90 percent lower than in the early 1960s, despite the tripling of diesel fuel use (CARB 2017a). In-use, on-road rules are expected to reduce black carbon emissions from on-road sources by 80 percent between 2000 and 2020.</p>

Source: PlaceWorks, 2020.

University of California

The GHG reduction goals for the proposed LRDP Update are based on the following University of California and UC Berkeley planning initiatives:

University of California Office of the President

The University of California Office of the President (UCOP) has adopted the following three GHG reduction goals for universities within the UC system:

1. Reduce total Scope 1, 2, and 3 emissions³³ to 1990 levels by 2020 in compliance with AB 32.³⁴
2. Achieve net-zero emissions from Scope 1 and 2 emissions by 2025.
3. Achieve net-zero emissions from specific Scope 3 emissions by 2050.^{35, 36}

UC Sustainable Practices Policy (2020)

In 2003, the UCOP adopted a comprehensive policy of detailed guidelines for Green Building Design and Clean Energy Standards (now the UC Sustainable Practices Policy), including an annual sustainability reporting requirement. This policy has been revised several times, the most recent version became effective in July 2020, which commits the UC to implementing actions intended to minimize the UC's impact on the environment and reduce the UC's dependence on non-renewable energy. The policy covers the areas of green building design, clean energy, climate protection, sustainable transportation, sustainable operations, zero waste, sustainable purchasing, sustainable foodservices, and sustainable water systems. The UC Sustainable Practices Policy establishes guidelines and includes climate change goals for all campuses that are consistent with, or would exceed, AB 32 and SB 32. It also requires each campus to complete an update of its climate action plan for reducing GHG emissions to 1990 levels by 2020 and achieving the goals of the UC Carbon Neutrality Initiative. Additionally, the UC Sustainable Practices Policy sets requirements and goals relevant to GHG emissions reduction (see Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling).³⁷

University Carbon Neutrality Initiative (2013)

Former UC President Janet Napolitano introduced the University Carbon Neutrality Initiative in 2013, which commits UC campuses to emitting net zero GHG emissions by 2025 from Scope 1 and 2 sources. In line with this initiative, UC Berkeley and other UC campuses have also committed to achieving net zero GHG emissions from all sources (including on-road mobile) by 2050. These goals require the UC system, including UC Berkeley, to aggressively improve energy efficiency in buildings, reduce emissions from campus fleet and other sources, and increase utilization of renewable energy sources. As part of the University Carbon Neutrality Initiative, internal guidelines are being developed to ensure that any use of offsets to achieve the carbon neutrality targets will result in additional, verified GHG emissions reductions from actions that align, as much as possible, with UC's research, teaching, and public service mission.

³³ Scope 1 emissions are direct GHG emissions (except for direct CO₂ emissions from biogenic sources) from sources controlled by UC Berkeley. Scope 2 sources are indirect anthropogenic (i.e., human-generated) GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling, at facilities controlled by UC Berkeley. Scope 3 emissions are from sources that are not owned or controlled by UC Berkeley, but that are central to UC Berkeley operations or activities (e.g., non-fleet transportation, employee/student commuting, air travel paid for by the institution). For UC Berkeley, Scope 3 emissions also include emissions from solid waste and water/wastewater sectors. While this target has been achieved, UC Berkeley will need to maintain levels below 1990.

³⁴ This goal is an interim goal and is not applicable to the proposed LRDP Update as the emissions forecast will be post-2020.

³⁵ University of California Office of the President (UCOP). 2019. Sustainable Practices Policy under the Climate Protection. <https://policy.ucop.edu/doc/3100155/SustainablePractices>

³⁶ This GHG reduction goal exceeds the state mandated GHG reduction goals under Executive Order S-03-05.

³⁷ University of California Office of the President (UCOP). 2019. Sustainable Practices Policy under the Climate Protection. <https://policy.ucop.edu/doc/3100155/SustainablePractices>

UC Berkeley

Climate Action Plan (2009)

In the fall of 2007, UC Berkeley prepared its first climate action plan, 2007 Cal Climate Action Partnership (CalCAP) Feasibility Study, to address the near-term requirement of the UC Sustainable Practices Policy for submittal of a climate action plan. In 2009 the UC Berkeley Office of Sustainability prepared the 2009 Climate Action Plan. The 2009 Climate Action Plan included an initial goal of reducing campus emissions to 1990 levels by 2014, faster than required under AB 32. The 2009 Climate Action Plan also began the framework for carbon neutrality at UC Berkeley by providing progressively lower emissions until climate neutrality is achieved by year 2050 from Scopes 1, 2 and 3. UC Berkeley includes additional Scope 3 emissions from solid waste and water/wastewater.

UC Berkeley Carbon Neutrality Planning Framework (2016)

In 2016, UC Berkeley published the 2025 Carbon Neutrality Planning Framework, which discusses strategies for achieving the University of California's GHG reduction goals of net-zero Scope 1 and 2 emissions by 2025. The 2025 goal translates to a total emissions reduction of approximately 80 percent below 2016 levels.³⁸ UC Berkeley intends to maintain net zero Scope 1 and 2 emissions by 2025 and beyond.

UC Berkeley Sustainability Plan (2020)

The UC Berkeley Sustainability Plan (2020 Sustainability Plan) includes an update to UC Berkeley's Carbon Neutrality Planning Framework. The UC Berkeley 2020 Sustainability Plan guides future work on campus relative to UC Berkeley's carbon neutrality and reduction goals. The 2020 Sustainability Plan provides a clear structure to articulate the vision, goals, and corresponding strategies to become more sustainable and align with systemwide UC Sustainable Practices Policy. The 2020 Sustainability Plan also integrates UC Berkeley-specific goals that exceed the UC policies, including climate and resiliency strategies for UC Berkeley. Table 5.7-6, UC Berkeley 2020 Sustainability Plan Goals, identifies the UC and UC Berkeley-specific sustainability goals currently in place.

TABLE 5.7-6 UC BERKELEY 2020 SUSTAINABILITY PLAN GOALS

University of California Goals	UC Berkeley Goals
<p>Climate and Resiliency</p> <ul style="list-style-type: none"> Climate neutrality from scope 1 and 2 sources by 2025 Climate neutrality from specific scope 3 sources (as defined by Second Nature's Carbon Commitment) by 2050 or sooner Reduce greenhouse gas (GHG) emissions from scope 1, 2 and 3 sources to 1990 levels by 2020, pursuant to the 	<ul style="list-style-type: none"> By 2023 produce an updated campus climate action plan that considers reductions in emissions from Scopes 1, 2, and 3 sources, climate resiliency, environmental justice, sustainable development goals, and a path to zero carbon operations.

³⁸ University of California Berkeley. 2016, December. 2025 Carbon Neutrality Planning Framework. Physical and Environmental Planning, Office of Sustainability and Energy.
https://sustainability.berkeley.edu/sites/default/files/uc_berkeley_2025carbonneutralityplanningframework_2016.pdf

TABLE 5.7-6 UC BERKELEY 2020 SUSTAINABILITY PLAN GOALS

University of California Goals	UC Berkeley Goals
California Global Warming Solutions Act of 2006 (Berkeley achieved).	<ul style="list-style-type: none"> ▪ Develop an actionable plan to decarbonize the main campus energy system. ▪ Plan for climate resilience to address impacts of increased storm intensity and longer periods of drought and heat.
Efficiency and Clean Energy	
<ul style="list-style-type: none"> ▪ Reduce energy-use intensity of campus space by 2% annually ▪ Install additional on-site renewable electricity supplies and energy storage systems whenever cost-effective and/or supportive of the location's Climate Action Plan or other plan ▪ By 2025 at least 40% of the natural gas combusted on-campus will be offset by biogas procurement ▪ New equipment requiring liquid cooling will not use once-through or single-pass cooling systems 	<ul style="list-style-type: none"> ▪ By 2020 procure 100% clean electricity for eligible accounts ▪ By 2050 the campus will use only 100% clean, renewable energy ▪ Major modifications to an existing building will reduce the affected space's energy use by a minimum of 2%. Medium modifications will result in "No Net Increase" to energy use. Minor Modifications that impact building energy use will strive to achieve the "No Net Increase" energy goal
Transportation: Fleet	
<ul style="list-style-type: none"> ▪ By 2025, zero emission or hybrid vehicles will account for at least 50% of all new light duty vehicle acquisitions ▪ Carbon neutral from fleet by end of calendar year 2025 	<ul style="list-style-type: none"> ▪ By 2030 eliminate diesel use in fleet vehicles ▪ By 2022 replace the shuttle fleet, as feasible, with zero emission, sustainable fueled, non-diesel, or hybrid vehicles ▪ By 2030 all low-speed neighborhood vehicles (including non-licensed carts) will be all electric or zero-emission ▪ By 2022 increase E85 fuel use in existing gasoline/E85 flex-fuel vehicles 20% over 2018 baseline
Transportation: Commute	
<ul style="list-style-type: none"> ▪ By 2025, reduce the percentage of employees and students commuting alone in vehicles by 10% relative to 2015 ▪ Reduce SOV commute rate to no more than 40% of employees and no more than 30% of all employees and students by 2050. (In other words, 60% of employees and 70% of employees and students will use alternative commute modes) ▪ Promote purchases and support investment in alternative fuel infrastructure, and ▪ By 2025, strive to have at least 4.5% of commuter vehicles ZEV ▪ By 2050, strive to have at least 30% of commuter vehicles ZEV ▪ Carbon neutral from commute by 2050 or sooner 	<ul style="list-style-type: none"> ▪ Reduce employee drive alone rate to 36% by 2025
Transportation: Air Travel	
<ul style="list-style-type: none"> ▪ Carbon neutral from business air travel by 2050 or sooner 	<ul style="list-style-type: none"> ▪ Offset a portion of business air travel carbon emissions ▪ Reduce emissions from business air travel by 10% by 2025
Built & Natural Environment: Buildings	
<ul style="list-style-type: none"> ▪ All new buildings and major modifications will achieve a minimum of LEED Silver certification (see Berkeley accelerated goal). Renovations shall achieve a minimum LEED ID+C Certified 	<ul style="list-style-type: none"> ▪ All new buildings and major modifications will achieve a minimum of LEED Gold certification ▪ All new buildings and major, medium and small modifications will maximize energy efficiency

TABLE 5.7-6 UC BERKELEY 2020 SUSTAINABILITY PLAN GOALS

University of California Goals	UC Berkeley Goals
<ul style="list-style-type: none"> All new buildings and major modifications will be designed and constructed to meet the whole-building energy performance targets or outperform the CBC energy-efficiency standards by at least 20% No new building or major modification off of the main campus energy system will use onsite fossil fuel combustion (e.g., natural gas) for space and water heating (see Berkeley accelerated goal) 	<ul style="list-style-type: none"> All new buildings and major modifications off of the main campus energy system will eliminate carbon emissions through no on-site fossil fuel combustion for space and water heating, laundry and cooking. By 2023, recommend a comprehensive sustainable built environment guidance
Built & Natural Environment: Land	
<ul style="list-style-type: none"> Maintain a certified Association for the Advancement of Sustainability in Higher Education (AASHE) Sustainability Tracking, Assessment and Rating System (STARS) report and achieve a Silver STARS rating and strive for Gold by 2023 	<ul style="list-style-type: none"> Plan every new project to serve as a model of resource conservation and environmental stewardship Enhance flora and fauna biodiversity and have proactively responsive preservation programs to address changing conditions such as climate disruption Manage Strawberry Creek as an open, natural-appearing creek and riparian corridor Advocate for multi-disciplinary living lab restoration research and learning opportunities on campus lands Increase awareness and appreciation of the campus open spaces and natural areas and promote inclusive culturally responsive experiential opportunities for the community
Built & Natural Environment: Water	
<ul style="list-style-type: none"> Reduce growth-adjusted potable water consumption 36% by 2025, compared to a three-year average baseline of FY2005/06, FY2006/07, and FY2007/08. Locations that achieve this target early are encouraged to set more stringent goals to further reduce potable water consumption Strive to reduce potable water used for irrigation by converting to recycled water, implementing efficient irrigation systems, drought-tolerant plantings, and turf removal Develop and maintain a Water Action Plan 	<ul style="list-style-type: none"> By 2022 produce a Sustainable Water Action Master Plan to include a menu of water saving and reuse recommendations and reduction goal targets to go beyond the UC goal By 2022 produce a Stormwater and Green Infrastructure Master Plan to identify best practices and catalyze multi-benefit projects Create learning and research opportunities and elevate water as a sustainability priority
Sustainable Services: Green Operations	
<ul style="list-style-type: none"> Certify one pilot building at LEED Operations and Maintenance (O&M) “Certified” level or higher 	<ul style="list-style-type: none"> Improve sustainability of building and grounds through maintenance, cleaning, and operational actions Maximize the points available in the related operations categories of STARS
Sustainable Services: Waste	
<ul style="list-style-type: none"> Achieve zero waste by prioritizing reduce, reuse, and then recycle and compost (or other forms of organic recycling) by the following: <ul style="list-style-type: none"> Reduce 25% per capita from FY2015/16 levels by 2025 Reduce 50% per capita from FY2015/16 levels by 2030 Divert 90% of municipal solid waste from the landfill By 2020, prohibit the sale, procurement or distribution of packaging foam, such as food containers and packaging 	<ul style="list-style-type: none"> By July 1, 2021 (accelerated goal): Replace single-use plastic food ware including accessory items with locally compostables or reusables; dine-in facilities to provide reusable food ware items with food consumed on-site Eliminate all nonessential, single-use plastic for which there is a viable alternative by end of calendar year 2030 Maximize the composting, on-site use, and tracking of organic landscape materials

TABLE 5.7-6 UC BERKELEY 2020 SUSTAINABILITY PLAN GOALS

University of California Goals	UC Berkeley Goals
<p>material, other than that utilized for laboratory supply or medical packaging and products</p> <ul style="list-style-type: none"> ▪ By end of calendar year 2020 eliminate plastic bags in retail and foodservice ▪ By 2023 eliminate single use plastic foodware and beverage bottles in food service. Strive to phase out single use plastic beverage bottles in other venues/services at contract renewal ▪ By 2023, update campus zero waste plans to identify next steps towards elimination of non-essential single use plastics by 2030 ▪ Preference contract awards to suppliers that can provide locally recyclable and locally compostable packaging options for pre-packaged, sealed food that is mass produced off premises and resold at university locations 	
Sustainable Services: Supply Chain	
<ul style="list-style-type: none"> ▪ Within three fiscal years of the addition of specific products and/or product categories to the UC Sustainable Procurement Guidelines procure: <ul style="list-style-type: none"> ▪ 100% compliance with Required Level Green Spend criteria ▪ 25% green spend ▪ 25% economically and socially responsible spend (reached within five years) ▪ Each University's Procurement department will integrate sustainability into its processes and practices, including competitive solicitations, in order to satisfy the sustainable purchasing goals outlined above for products, as well as for the procurement of services ▪ Procure computing equipment and other peripherals that are a minimum bronze-level registration or higher under the Electronic Products Environment Assessment Tool (EPEAT) 	<ul style="list-style-type: none"> ▪ Reduce the carbon emissions and carbon impacts in the supply chain
Sustainable Services: Green Labs	
<ul style="list-style-type: none"> ▪ Implement an ongoing Green Lab Assessment Program supported by a department on campus to assess operational sustainability of research groups and the laboratories and other research spaces they use 	<ul style="list-style-type: none"> ▪ UC Berkeley Green Labs program will engage multiple partners in greener research and environmental stewardship within as many labs as possible. Key areas for improvements: engagement and green labs certification; procurement of greener consumables and equipment; energy and water efficiency; and waste reduction.
Health & Sustainability: Food	
<ul style="list-style-type: none"> ▪ By 2030, 25% of food spend will be on sustainable food products while maintaining accessibility and affordability for all students ▪ Each campus and health location shall strive to reduce greenhouse gas emissions of their food purchases through globally-inspired, culturally-acceptable plant-forward menus. By 2020, establish a baseline and goal 	<ul style="list-style-type: none"> ▪ All covered food service entities comply with the Food & Beverage Choices policy to provide nutritious food choices on campus ▪ Enhance knowledge and improve access to nutritious, sustainable, and plant-forward food options and menus to the campus community, including basic needs. Increase healthy, just, and sustainable event catering

TABLE 5.7-6 UC BERKELEY 2020 SUSTAINABILITY PLAN GOALS

University of California Goals	UC Berkeley Goals
<ul style="list-style-type: none"> ▪ Campuses will include the above goals in lease language as new leases and contracts are negotiated or existing leases are renewed and work with existing tenants to advance sustainable foodservice practices as much as possible 	<ul style="list-style-type: none"> ▪ Develop accessible garden amenities on campus ▪ Reduce post-consumer food waste ▪ Expand food related learning and living lab opportunities
Health & Sustainability: Health & Wellness	
<ul style="list-style-type: none"> ▪ Smoking and tobacco use is prohibited at all UC controlled properties 	<ul style="list-style-type: none"> ▪ Promote and expand health and wellness options in infrastructure and practices for faculty, staff, and students
Culture & Learning: Academics & Research	
<ul style="list-style-type: none"> ▪ Maintain a certified Association for the Advancement of Sustainability in Higher Education (AASHE) Sustainability Tracking, Assessment and Rating System (STARS) report and achieve a Silver STARS rating and strive for Gold by 2023 	<ul style="list-style-type: none"> ▪ Support the development, expansion and participation in sustainability and climate degrees and courses ▪ Expand opportunities for experiential environmental and sustainability learning and student research ▪ Maximize the points available in the Academics and Research categories of STARS
Culture & Learning: Diversity, Equity, & Inclusion	
<ul style="list-style-type: none"> ▪ Maintain a certified Association for the Advancement of Sustainability in Higher Education (AASHE) Sustainability Tracking, Assessment and Rating System (STARS) report and achieve a Silver STARS rating and strive for Gold by 2023 	<ul style="list-style-type: none"> ▪ Situate environmental and social justice as central pillars of campus sustainability efforts, including in operations/administration, learning activities, and physical planning ▪ Cultivate an authentic sense of belonging and strengthen diversity, equity, and inclusion in sustainability spaces for all UC Berkeley undergraduate, graduate and professional student, faculty, and staff while contributing to sustainable practices and environmental issues ▪ Maximize the points available in the Diversity and Affordability categories of STARS
Culture & Learning: Engagement	
<ul style="list-style-type: none"> ▪ Maintain a certified Association for the Advancement of Sustainability in Higher Education (AASHE) Sustainability Tracking, Assessment and Rating System (STARS) report and achieve a Silver STARS rating and strive for Gold by 2023 	<ul style="list-style-type: none"> ▪ Make sustainability a guiding principle and core value for UC Berkeley's community and operations ▪ Engage the broad and diverse campus community in a culture of sustainability through partnerships to include but not limited to People & Culture, Student Affairs, Athletics, Administration, Community Relations, and the Academic Senate ▪ Maximize the points available in the Engagement categories of STARS

Source: UC Berkeley, 2020, November, Sustainability Plan.

UC Strategic Energy Plan, University of California, Berkeley (2008)

In February 2009, the UC Strategic Energy Plan was prepared for all UC campuses to fulfill a goal of the UC Sustainable Practices Policy to implement energy efficiency projects in existing buildings.³⁹ The initial goal for the retrofit projects was to reduce systemwide, growth-adjusted energy consumption by 10 percent or more by 2014 from the year 2000 base consumption level. The UC Strategic Energy Plan analyzed energy use and GHG trends and identified potential energy efficiency retrofit projects at all buildings over 50,000 square feet (primarily lighting, HVAC, commissions, and central plant measures) for all UC campuses. Energy savings, GHG emissions savings, and financial returns were estimated for hundreds of projects, which are grouped into Tier 1 (committed projects to be completed over the next six years) and Tier 2 (additional planned projects) based on their savings and financial payback. The UC Strategic Energy Plan project list is intended to be regularly updated by each campus to evaluate the feasibility of additional energy-saving measures.

UC Berkeley Energy Policy (2020)

UC Berkeley has adopted a policy on energy use to ensure commitment to energy efficiency. The UC Berkeley Energy Use Policy creates requirements for campus departments and a specific framework to support energy and carbon-efficient decisions in accordance with the UC Sustainable Practices Policy, UC Berkeley LRDP, Campus Master Plan, and Climate Action Plan. Primary offices responsible for the implementation of this UC Berkeley Energy Use Policy are the Energy Office, Building Department, Maintenance Operations of Facilities Services, and Capital Projects. The UC Berkeley Energy Use Policy outlines energy requirements and guidelines for:

- Existing Building Operations
- New Construction
- Large, Medium, and Small Renovations
- Clean Energy Supply
- Supply Chain Management and Information Technology
- Laboratories

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing UC Berkeley buildings, infrastructure, grounds, and maintenance issues. The Design Standards state that the UC system, including UC Berkeley, have a goal of being carbon neutral by 2025.

³⁹ University Office of the President (UCOP). 2008, July 18. UC Strategic Plan, University of California Berkeley, Final Report. Prepared by Newcomb Anderson McCormick, Inc.

Regional

Plan Bay Area: Strategy for a Sustainable Region

As described in Chapter 5.o, Environmental Analysis, of this Draft EIR, Plan Bay Area is the San Francisco Bay area's Regional Transportation Plan (RTP)/Sustainable Community Strategy (SCS). Plan Bay Area 2040 is the current version of the plan. This document describes how the San Francisco Bay Area will develop over the next two decades, and the SCS integrates transportation, land use, and housing to meet GHG reduction targets set by CARB. Plan Bay Area 2040 proposes the Climate Initiatives Program, which promotes the densification of land use and a relative decrease in per capita energy consumption, in addition to a net reduction in vehicle fuel use while also allowing growth within the region.

As part of the implementing framework for Plan Bay Area, local governments have identified priority development areas (PDA) and transit priority areas (TPA) to focus growth. PDAs are transit-oriented, infill development opportunity areas within existing communities. TPAs are half-mile buffers surrounding major transit stops or terminals. Overall, well over two-thirds of all regional growth in the Bay Area by 2040 is allocated within PDAs.⁴⁰ Figure 5-1, Priority Development Areas and Transit Priority Areas, shows the PDAs and TPAs that overlap with the EIR Study Area.

Bay Area Clean Air Plan

BAAQMD adopted the 2017 Clean Air Plan: Spare the Air, Cool the Climate on April 19, 2017. The 2017 Clean Air Plan also lays the groundwork for reducing GHG emissions in the Bay Area to meet the state's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.⁴¹

A comprehensive multipollutant control strategy has been developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, toxic air contaminants, and GHG from a full range of emission sources. These control measures cover the following sectors: 1) stationary (industrial) sources; 2) transportation; 3) energy; 4) agriculture; 5) natural

⁴⁰ Bay Area Air Quality Management District, 2017, Final 2017 *Clean Air Plan*, Spare the Air, Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area, <http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans>, accessed on March 18, 2019.

⁴¹ Metropolitan Transportation Commission, Priority Development Areas, <http://opendata.mtc.ca.gov/datasets/priority-development-areas-current>, and Transit Priority Areas, http://opendata.mtc.ca.gov/datasets/d97b4f72543a40b2b85d59aco85e01ao_o, accessed April 17, 2020.

and working lands; 6) waste management; 7) water; and 8) super-GHG pollutants. Overall, the proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of “super-GHGs” such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (gasoline, diesel, and natural gas).
- Increase efficiency of the energy and transportation systems.
- Reduce demand for vehicle travel and high-carbon goods and services.
- Decarbonize the energy system.
- Make the electricity supply carbon free.
- Electrify the transportation and building sectors.

Bay Area Commuter Benefits Program

Under Air District Regulation 14, Model Source Emissions Reduction Measures, Rule 1, Bay Area Commuter Benefits Program, employers with 50 or more full-time employees in the BAAQMD are required to register and offer commuter benefits to employees. In partnership with the BAAQMD and the MTC, the rule’s purpose is to improve air quality, reduce GHG emissions, and decrease the Bay Area’s traffic congestion by encouraging employees to use alternative commute modes, such as transit, vanpool, carpool, bicycling, and walking. The benefits program allows employees to choose from one of four commuter benefit options, including a pretax benefit, employer-provided subsidy, employer-provided transit, and alternative commute benefit.

5.7.1.3 EXISTING CONDITIONS

Like the federal and state governments, UC Berkeley conducts annual GHG inventories to assess its progress in reducing emissions and meeting its climate change goals. UC Berkeley categorizes its emissions into “scopes,” and pursuant to the UC Sustainable Practices Policy, defines Scope 1 and 2 sources per the Climate Registry⁴² and Scope 3 sources per Second Nature.⁴³ The scope definitions are organized around the locational and operational control of emission sources.

- **Scope 1:** All direct GHG emissions (except for direct CO₂ emissions from biogenic sources) from sources controlled by UC Berkeley.
- **Scope 2:** Indirect anthropogenic (i.e., human-generated) GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling at facilities controlled by UC Berkeley.
- **Scope 3:** Emissions from sources that are not owned or controlled by UC Berkeley, but that are central to campus operations or activities (e.g., nonfleet transportation, employee/student commuting, air travel paid for by the institution). For UC Berkeley, Scope 3 emissions also include emissions from solid waste and water/wastewater sectors.

⁴² Climate Registry. 2016, January. General Reporting Protocol for the Voluntary Reporting Program. <https://www.theclimateregistry.org/wp-content/uploads/2014/11/General-Reporting-Protocol-Version-2.1.pdf>

⁴³ Second Nature. 2012. American College & University Presidents’ Climate Commitment, Implementation Guide, Version 2.1 – http://secondnature.org/wp-content/uploads/ACUPCCImplementationGuide_V2.1_.pdf

Table 5.7-7, UC Berkeley GHG Emissions, summarizes GHG inventories for the UC Berkeley campus by scope for 2018 and year 1990 emissions. UC Berkeley GHG Scope 1 and Scope 2 emissions are submitted and verified by the Climate Registry.

TABLE 5.7-7 UC BERKELEY GHG EMISSIONS

SCOPE	SECTOR	HISTORICAL 1990 Emissions (MTCO ₂ E)	2018 Emissions (MTCO ₂ E)
1	Cogeneration Plant ^a	131,594	123,888
	UC Berkeley Campus Fleet ^a	1,968	1,772
	Fuel Use ^a	8,429	11,719
	Refrigerants ^a	237	779
	Subtotal Scope 1	142,228	138,158
2	Purchased Electricity ^a	9,221	4,781
3	Student Commute ^b	4,100	4,097
	Faculty and Staff Commute ^b	23,142	16,520
	Visitors ^b	NA	4,986
	Vendors ^b	NA	89
	Air Travel ^a	19,980	22,926
	Solid Waste ^a	996	740
	Water/Wastewater ^a	783	299
	Subtotal Scope 3	49,001	49,657
TOTAL		200,450	192,597
Carbon Sequestration		-16	-16

Notes: Cap-and-Trade covered entity.

a. 2018 GHG emissions and activity data provided by UC Berkeley. Prior to 2017, UC Berkeley received heat for the Campus Park in the form of high-pressure steam from the on-campus cogeneration plant, which was owned and operated by a third party, and purchased electricity from PG&E to power the Campus Park, which constitutes 97 percent of UC Berkeley's electricity consumption. Between the opening of the plant in the 1980s and mid-2017, the third-party owner and operator had a power purchase agreement with PG&E to sell electricity generated by the cogeneration plant to PG&E. The GHG emissions associated with the plant during those years were the responsibility of the third-party owner operator. In 2017, the third-party operator's power purchase agreement with PG&E ended as did UC Berkeley's energy services contract with the third-party operator. Following the end of both contracts, UC Berkeley assumed ownership of the cogeneration plant and began to use the majority of the Campus Park electricity from the cogeneration plant. The change in ownership shifted the reporting entity for GHG emissions associated with the plant from the third party to UC Berkeley. As such a recalculation of UC Berkeley's baseline 1990 emission levels are appropriate.

b. The methodology for determining faculty and staff vehicle miles traveled (VMT) and student VMT utilized here for the proposed LRDP Update differs from the methodology used for the annual emissions reporting. These emissions are required for the proposed LRDP Update but are not part of the annual GHG emissions reporting provided or required by UC Berkeley.

Ground Transportation sector emissions are based on VMT provided by Fehr & Peers and modeled using EMFAC2017.

Source: UC Berkeley, 2020.

5.7.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant greenhouse gas impact if it would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.
3. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

University of California

Generate a Significant Amount of GHG Emissions

Given the seriousness of climate change and the regional significance of UC Berkeley, UC Berkeley has determined that for the purposes of this analysis, any increase in GHG emissions above existing conditions (no net increase) would result in a significant impact on the environment.

Pursuant to CEQA Guidelines Section 15125, the environmental setting normally constitutes the baseline physical conditions by which an agency determines whether an impact is significant. The existing baseline for GHG impacts under CEQA is 2018 emissions. Therefore, in the context of CEQA, a project that achieves “no net increase” from the 2018 baseline would not result in significant GHG impacts. This is reiterated in the Natural Resources Agency’s 2009 Final Statement of Reasons pursuant to Senate Bill 97, which states that:

... section 15054.4(b)(1) is not intended to imply a zero net emissions threshold of significance. As case law makes clear, there is no “one molecule” rule in CEQA.

The Final Statement of Reasons makes clear that the CEQA significance threshold at which an impact would occur is some point above zero. A “no net increase” from the 2018 baseline would result in no CEQA impacts.

Additionally, the 2017 Scoping Plan Update states that “there are recent examples of land use development projects in California that have demonstrated that it is feasible to design projects that achieve zero net additional GHG emissions.” In the 2017 Scoping Plan Update, CARB recognizes that achieving no net increase in GHG emissions compared to existing conditions would demonstrate that a project is not contributing to climate change impacts, and is a recommended objective for land use development projects that are able to feasibly achieve this goal.

No Net Increase Threshold (GHG-1). Therefore, for the purpose of this EIR, the project would result in a significant GHG impact if implementation of the proposed LRDP Update increases GHG emissions above existing conditions (2018).

Conflict with Plans or Policies for Reducing GHG Emissions

Under the University Carbon Neutrality Initiative, carbon neutrality is defined as having “net zero” GHG emissions to be achieved by:

1. Eliminating GHG emissions, OR

2. Minimizing GHG emissions as much as possible and using compliance and voluntary carbon offsets or other measures to mitigate the remaining emissions.⁴⁴

UCOP's and UC Berkeley's goals for carbon neutrality (i.e., "net zero") are more stringent than the threshold established under CEQA (e.g., "no net increase").

Carbon Neutrality Threshold (GHG-2). To ensure consistency with the UC Sustainable Practices Policy and the UC Berkeley Sustainability Plan, the proposed LRDP Update EIR also considers the following threshold:

Trajectory to Achieve Carbon Neutrality: Reduce or offset total GHG emissions by 2045.⁴⁵ Because the buildout horizon is the 2036–37 academic year, this EIR considers a trajectory to achieve the 2045 goal for calendar year 2036 for all sources (i.e., 67 percent reduction from 2018 levels at or before 2036).

For the proposed LRDP Update, assessment toward meeting the State's climate change goals is benchmarked from 2018 emissions levels to ensure consistency in accounting for Scope 3 emissions sources and provides a more aggressive target from which to measure trajectory with the State's and UC Berkeley's carbon neutrality goals, since UC Berkeley currently generates less GHG emissions in 2018 than in 1990. Under the UC Sustainable Practices Policy, to achieve carbon neutrality all Scope 1 and 2 emissions must be either reduced or offset (2025). In addition, in accordance with the UC Berkeley Sustainability Plan, UC Berkeley would achieve carbon neutrality for expanded Scope 3 sources (commute, air travel, water- and waste-related emissions) by 2050 or sooner. Because of Executive Order B-55-18, this EIR accelerates this to year 2045.

Because it is not fully possible to completely eliminate GHG emissions from UC Berkeley activities, carbon offsets (compliance offsets and voluntary offsets) are utilized to achieve UC Berkeley's carbon neutrality goals. The Carbon Neutrality Threshold is based on a trajectory to achieve carbon neutrality by 2045 and is used to evaluate consistency with UCOP and UC Berkeley plans adopted to reduce GHG emissions.

Housing Projects #1 and #2

Buildout of Housing Projects #1 and #2 is included in the proposed LRDP Update forecast. Therefore, GHG emissions associated with Housing Projects #1 and #2 are analyzed in the context of the UC Berkeley campuswide GHG reduction goals described above.

⁴⁴ Second Nature. 2020 (accessed) Definitions of Commitment Terms. <https://secondnature.org/signatory-handbook/frequently-asked-questions/>

⁴⁵ Under Executive Order B-55-18, the state's carbon neutrality target was accelerated to year 2045.

5.7.3 IMPACT DISCUSSION

5.7.3.1 METHODOLOGY

LRDP Update

Construction

Construction emissions (i.e., CO₂, CH₄, and N₂O) were calculated using the California Emissions Estimator Model (CalEEMod), version 2016.3.2, as recommended by BAAQMD. For the proposed LRDP Update, the timing of individual construction projects and overlap are unknown (see Table 3-2, Potential Areas of New Development and Redevelopment). As a result, it is not possible to directly calculate amortized annual GHG emissions associated with the entirety of the proposed LRDP Update. To provide an estimate of average daily construction emissions that may occur during the lifetime of the proposed LRDP Update, buildout information coupled with CalEEMod default values were compiled. Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling, includes the details on the modeling assumptions for construction activities that implement the proposed LRDP Update.

Operational Phase

Year 2018 GHG emissions were based on emissions data provided by UC Berkeley as part of the annual reporting it conducts, with the exception of Scope 3 on-road transportation emissions, which were based on data provided by Fehr & Peers and modeled using CARB's EMFAC2017 emissions program. Table 5.7-8, GHG Emissions Forecast Analysis Methodology, provides a summary of the methodology used to estimate existing emissions as well as how emissions were forecast for the business-as-usual (BAU) scenario. Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling, of this Draft EIR, includes additional information on the modeling assumptions.

TABLE 5.7-8 GHG EMISSIONS FORECAST ANALYSIS METHODOLOGY

Sector	Existing 2018	LRDP Forecast Analysis Methodology 2036
Scope 1		
Cogeneration Plant/Boiler	Based on fuel use provided by UC Berkeley. This facility is a cap-and-trade covered entity.	The cogeneration plant fuel use is based on the 2020 UC Berkeley Campus Energy Plan report ⁴⁶ BAU design option.
UC Berkeley Campus Fleet	Based on fuel use provided by UC Berkeley	UC Berkeley fleet fuel use and associated VMT are assumed to grow proportional to the increase in faculty and staff.

⁴⁶ ARUP. 2020, July 21. *University of California, Berkeley Campus Energy Plan Additional Options Analysis (UC Berkeley 2020 Campus Energy Plan report)*.

TABLE 5.7-8 GHG EMISSIONS FORECAST ANALYSIS METHODOLOGY

Sector	Existing 2018	LRDP Forecast Analysis Methodology 2036
Fuel Use	Based on fuel use provided by UC Berkeley	Fuel use for thermal needs, emergency generators, boilers, off-road equipment, and other <i>de minimus</i> sources are assumed to grow proportional to the increase in total square footage (excludes parking garages).
Refrigerants	Based on refrigerant use provided by UC Berkeley	Refrigerant use assumed to grow proportional to the increase in total square footage (excludes parking garages).
Scope 2		
Purchased Electricity	Based on purchased electricity use provided by UC Berkeley	Purchased electricity is assumed to grow proportional to the increase in total square footage (excludes parking garages).
Scope 3		
Faculty and Staff Commute Student Commute Visitors Vendors	Based on VMT provided by Fehr & Peers and modeled using EMFAC2017	LRDP Update 2036 VMT provided by Fehr & Peers and modeled using EMFAC2017.
Air Travel	Based on emissions provided by UC Berkeley	Air travel emissions assumed to grow proportional to the increase in service population (i.e., students and faculty/staff).
Solid Waste	Based on solid waste disposal and emissions provided by UC Berkeley	Solid waste disposal and the associated GHG emissions are assumed to grow proportional to the increase in service population (i.e., students and faculty/staff).
Water/Wastewater	Based on water/wastewater and emissions provided by UC Berkeley	Water and wastewater forecast is based on the "Water and Wastewater Demand Methodology for LRDP Memorandum," dated October 26, 2020 (see Chapter 5.17, Utilities and Service Systems).

Source: PlaceWorks, 2020.

UC Berkeley Sustainability Plan Reductions

The following measures have been identified by UC Berkeley and the UC Sustainability Practices Policy to reduce UC Berkeley's GHG emissions and have been accounted for as part of the UC Berkeley 2036 forecast for the "Sustainability" scenario.

- **Electricity procured at UC Berkeley is required to be from 100 percent clean electricity (carbon neutral) sources for eligible accounts by year 2025.** In 2018 UC Berkeley purchased electricity from the EBCE, PG&E, and UCOP wholesale energy. Energy procured from EBCE in 2018 was carbon neutral and would continue to be procured from carbon neutral sources. PG&E includes two renewable energy

programs (Solar Choice and Regional Renewable Choice) that would allow UC Berkeley to meet the 100 percent clean electricity goals. The UCOP purchases wholesale electricity from other wholesale electric service providers (ESP). The ESPs statutorily limit their renewable energy mix to the current RPS goal for the calendar year in effect. To ensure the University of California campuses meet the UCOP carbon neutrality goals, in 2015 the UCOP became a registered ESP in order to be able to procure electricity from carbon neutral sources. In year 2025, UC Berkeley will procure 100 percent carbon neutral electricity.⁴⁷ As a result of UC Berkeley's carbon neutrality initiatives regarding purchased electricity, all purchased electricity in 2036 is anticipated to be from carbon neutral sources.

- **Carbon neutral from fleet by end of calendar year 2025.**⁴⁸ In 2018, the UC Berkeley campus fleet included use of gasoline- and diesel-powered vehicles. The UC Sustainable Practices Policy requires that by year 2025 campus fleets are carbon neutral and zero emissions/hybrid vehicles account for at least 50 percent of all new light-duty vehicle acquisitions. In addition, the UC Berkeley Sustainability Plan includes goals to eliminate diesel use in fleets by 2030. The 2036 forecast includes use of electric vehicles for the campus passenger fleet to reflect carbon-neutral fleet emissions. In accordance with these policies, all campus fleet vehicles scheduled for retirement shall be replaced with fuel efficient, light electric vehicles, zero emissions vehicles, and/or alternative-fueled vehicles consistent with the needs of the campus. To meet the 2025 carbon neutrality goal, voluntary carbon offsets will be acquired until the fleet is transitioned to carbon-free.
- **Develop an actionable plan to decarbonize the main campus energy system.** UC Berkeley is in the preliminary stages of planning and design of the cogeneration plant. To assess options to improve or replace the existing cogeneration plant, UC Berkeley commissioned a study in 2019. The 2020 UC Berkeley Campus Energy Plan report⁴⁹ identified over 12 options for replacing and/or upgrading the cogeneration plant, including a baseline upgrade to the existing plant. This 2036 baseline scenario is based on the BAU scenario (Scenario o), which assumes maintenance and equipment replacement. Replacement of the cogeneration plant (Option 2) would not meet the UC Berkeley carbon neutrality initiatives except through use of carbon offsets; therefore, the reductions from this scenario are not considered in the "Sustainability" scenario. The "Sustainability" scenario considers both the Central Plant option that utilizes renewable sources of electricity rather than natural gas (Option 11C) and the Hybrid Nodal Heat Recover that would also utilize renewable sources of electricity rather than natural gas for the majority of the Campus Park and would retain an improved cogeneration plant to provide some energy and resilience during power outages (Option 12). GHG reductions associated with these options are included in Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling, of this Draft EIR. Though UC Berkeley has not committed to a specific design option for the cogeneration plant, the "with Sustainability Plan" utilizes Option 12 as a conservative scenario for the "Sustainability" scenario.
- **Prohibition of Natural Gas Infrastructure in New Buildings.** In accordance with the UC Sustainable Practices Policy and the UC Berkeley Sustainability Plan, new building projects that are not connected to the Campus Park energy system will eliminate carbon emissions through no on-site fossil fuel

⁴⁷ This excludes the main campus PG&E account at this time.

⁴⁸ UC Berkeley's fleet includes on-road vehicles owned or leased by UC Berkeley.

⁴⁹ ARUP. 2020, *University of California, Berkeley Campus Energy Plan Additional Options Analysis (UC Berkeley 2020 Campus Energy Plan report)*.

combustion for space and water heating (pursuant to UC policy) and laundry and cooking (per UC Berkeley policy).

- **Solar Energy.** In accordance with the UC Berkeley Sustainability Plan, new buildings and major modifications will evaluate and include, if feasible, on-site solar PV and battery storage or other renewable energy options. By 2025, UC Berkeley will increase on-site solar PV capacity by 2.5 megawatts.
- **Cogeneration Plant GHG Emissions.** As a CARB-covered entity, UC Berkeley will ensure emissions generated by the cogeneration plant comply with CARB’s cap and trade program. Compliance offsets purchased for compliance with CARB’s cap-and-trade program shall be purchased from an accredited carbon credit market. As noted previously, compliance offsets are specific to CARB’s cap-and-trade program. Such compliance offsets (or California carbon offsets) shall be registered with, and retired⁵⁰ by an offset project registry, as defined in California Code of Regulations Title 17, Section 95802(a), and approved by CARB—such as but not limited to, Climate Action Reserve, American Carbon Registry, or Verra (formerly Verified Carbon Standard). In order to demonstrate that the compliance offsets provided are real, permanent, additional, quantifiable, verifiable, and enforceable, as those terms are defined in the California Health and Safety Code Sections 38562(d)(1) and (2), UC Berkeley will document in its CARB annual report: the protocol used to develop those credits and the third-party verification report concerning those credits. As and when the credits are retired, UC Berkeley will document in its annual report the unique serial numbers of those credits showing that they have been retired. Currently, compliance offsets only account for up to 8 percent of the compliance mechanisms under cap and trade. However, starting in year 2021, compliance offsets will be limited to no more than 4 percent of their compliance obligation for emissions from 2021 to 2025, and 6 percent for emissions from 2026 to 2030. Additionally, starting with 2021 emissions, no more than half of the quantitative usage limit can be sourced from projects that do not provide direct environmental benefits in the state.

5.7.3.2 IMPACT ANALYSIS

GHG-1	The proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
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LRDP Update

Potential future development under the proposed LRDP Update would contribute to global climate change through direct and indirect emissions of GHGs from land uses at the UC Berkeley campus. However, an LRDP does not directly result in development without additional approvals. Before any development can occur at the UC Berkeley campus, it must be analyzed for consistency with the proposed LRDP Update and other applicable UC Berkeley, UCOP, and state requirements; comply with the requirements of CEQA; and obtain all necessary clearances and permits.

⁵⁰ When Climate Reserve Tonnes (CRTs) are transferred to a retirement account in the Reserve System, they are considered retired. Retirement accounts are permanent and locked to prevent a retired CRT from being transferred again. CRTs are retired when they have been used to offset an equivalent ton of emissions or have been removed from further transactions on behalf of the environment.

Table 5.7-9, UC Berkeley LRDP GHG Emissions Forecast, shows the adjusted BAU GHG emissions forecast for UC Berkeley and the GHG forecast with implementation of the UC Sustainable Practices Policy and UC Berkeley's 2020 Sustainability Plan and Campus Energy Plan report.

Improvements to the central energy plant are consistent with proposed LRDP Update Goal 4.2, listed in Chapter 3, Project Description, of this Draft EIR. As shown in Table 5.7-9, even without implementation of these plans, the proposed LRDP Update would generate a decrease in GHG emissions at buildout. This is primarily due to increased fuel efficiency, improvements in vehicle engine technology, and reductions from statewide implementation of SB 100 renewable energy goals. However, with implementation of UC Sustainable Practices Policy and UC Berkeley's 2020 Sustainability Plan and Campus Energy Plan report, GHG emissions would be substantially reduced from existing conditions. Additionally, the proposed LRDP Update forecast does not account for the UC Sustainable Practices Policy that is expected to require the use of carbon offsets (compliance offsets for cap-and-trade-covered entities and/or voluntary offsets) to achieve carbon neutrality for Scope 1 and 2 emissions at UC Berkeley (see discussion under GHG-2). Use of voluntary carbon offsets would further reduce GHG emissions. Consequently, implementation of the proposed LRDP Update would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions impacts. Impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1 and #2

Implementation of Housing Project #1 and Housing Project #2 would generate an increase in GHG emissions from transportation sources (passenger vehicles, trucks), water use and wastewater generation, and solid waste generation. GHG emissions associated with Housing Projects #1 and #2 are included in the proposed LRDP Update emissions forecast in Table 5.7-9. As identified above, GHG emission at buildout of the proposed LRDP Update would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions impacts. Furthermore, though Housing Projects #1 and #2 would be constructed in the near term, to achieve the long-term GHG reduction goals outlined under SB 32, Executive Order (EO) S-03-05, EO B-55-18, and UCOP and UC Berkeley carbon neutrality goals, UC Berkeley conducts annual GHG emissions inventories and implements the UCOP and UC Berkeley sustainability and policy initiative. Housing Projects #1 and #2 would be subject to these sustainability policies, including the requirement that electricity be procured from 100 percent renewable sources. Compliance with the UC Berkeley sustainability and policy initiative results in decreased annual GHG emissions compared to existing conditions (either through UC Berkeley sustainability initiatives, offsets, or a combination of both). As a result, implementation of Housing Project #1 and #2 would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions impacts. Impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

TABLE 5.7-9 UC BERKELEY LRDP GHG EMISSIONS FORECAST

		MTCO ₂ e/Year							
Scope	Sector	2018		2036 Adjusted BAU Forecast		Net Change from Existing	2036 LRDP Forecast Sustainability Scenario		Net Change from Existing
1	Cogeneration Plant ^a	123,888	66%	111,393	59%	-12,496	16,667	19%	-107,222
	UC Berkeley Campus Fleet ^b	1,772	1%	1,581	1%	-191	0	0%	-1,772
	Fuel Use ^c	11,719	6%	17,651	9%	5,932	17,651	20%	5,932
	Refrigerants ^c	779	0.4%	1,173	1%	394	1,173	1%	394
	Subtotal Scope 1 ^c	138,158	73%	131,798	69%	-6,360	35,491	41%	-102,667
2	Purchased Electricity ^d	4,781	3%	4,036	2%	-745	72	0.1%	-4,709
3	Student Commute ^e	4,097	2.2%	3,168	1.7%	-929	3,168	4%	-838
	Faculty and Staff Commute	16,520	8.8%	14,348	7.6%	-2,172	14,348	17%	-1,756
	Visitors ^e	4,986	2.6%	4,080	2.1%	-906	4,080	5%	-906
	Vendors ^e	89	0.0%	75	<0.1%	-13	75	0.1%	-13
	Air Travel ^f	22,926	12.2%	27,946	15%	5,020	27,946	32%	5,020
	Solid Waste ^g	740	0.4%	902	0.5%	162	902	1%	162
	Water/Wastewater ^g	299	0.2%	480	0.3%	181	480	0.6%	181
	Subtotal Scope 3	49,657	24.2%	51,507	27.1%	1,850	51,507	59%	1,850
Amortized Construction ^h		NA	NA	2,728	1%	2,728	2,728	3%	2,728
TOTAL		192,597	100%	189,562	100%	-3,035	86,563	100%	-102,798
No Net Increase Threshold		NA	NA	192,597	NA	0	192,597	NA	0
Exceeds Threshold #1		NA	NA	No	NA	No	No	NA	No

Notes: The Sustainability Scenario only considers emissions reductions associated with the University's Scope 1 and 2 emissions sources.

a. ARUP. 2020, July 21. University of California, Berkeley Campus Energy Plan Additional Options Analysis. The adjusted BAU scenario is based on natural gas use associated with scenario "o" (existing plant with equipment replacement and maintenance) and scenario 12 (Hybrid Nodal Recovery) from the 2020 UC Berkeley Campus Energy Plan report.

b. In accordance with the UC Sustainability Policy, the campus fleet will run on carbon neutral sources by 2025. In accordance with this policy, GHG emissions from the campus fleet are assumed to be zero. To meet the 2025 carbon neutrality goal, voluntary carbon offsets will be acquired until such time the fleet is transitioned to carbon-free.

c. Pursuant to the UC Sustainable Practices Policy, GHG offsets will be purchased to meet the requirement of carbon neutrality for Scope 1 and 2 emissions beginning in 2025.

d. Pursuant to the UC Berkeley Sustainability Plan, UC Berkeley will procure 100 percent clean electricity by 2020. Under the UC Sustainable Practices Policy, UC Berkeley also will reduce energy use intensity of campus space by 2 percent annually. Biogas is not currently available at the UC Berkeley campus; therefore, natural gas used onsite will be offset through use of voluntary carbon offsets in accordance with the UC Sustainable Practices Policy.

e. Transportation emissions are based on annual VMT provided by Fehr & Peers and modeled using EMFAC2017. Modeling accounts for the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule; and therefore, emission rates used in the 2036 analyses are conservative.

f. In accordance with the UC Sustainable Practices Policy, UC Berkeley will be carbon neutral from business air travel by 2050 or sooner. Under UC Berkeley's Sustainability Plan, UC Berkeley will offset a portion of business air travel to reduce emissions and reduce emission by 10 percent by 2025. To meet the carbon neutrality goal, voluntary carbon offsets will be acquired.

g. Emissions forecasted based on the emission rates for solid waste and water/wastewater provided by UC Berkeley for the 2018 emission inventory.

h. Total construction emissions for the current LRDP Update estimated amortized over a 30-year building lifespan.

Source: UC Berkeley; PlaceWorks, 2021.

GHG-2	The proposed project could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.
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LRDP Update

State and Regional Plans

CARB and ABAG/MTC have prepared the following applicable plans for GHG emissions that indirectly apply to UC Berkeley:

- 2017 Climate Change Scoping Plan
- Plan Bay Area (RTP/SCS)

2017 Climate Change Scoping Plan

The CARB Scoping Plan is applicable to State agencies but is not directly applicable to cities/counties and individual projects (i.e., the Scoping Plan does not require UC Berkeley to adopt policies, programs, or regulations to reduce GHG emissions). However, new regulations adopted by the State agencies from the Scoping Plan result in GHG emissions reductions at the local level. So local jurisdictions benefit from reductions in transportation emissions rates, increases in water efficiency in the building and landscape codes, and other statewide actions that affect a local jurisdiction's emissions inventory from the top down. Development projects accommodated under the proposed LRDP Update are required to adhere to the programs and regulations identified by the Scoping Plan and implemented by state, regional, and local agencies to achieve the statewide GHG reduction goals of AB 32 and SB 32. Additionally, growth at UC Berkeley is guided by the UC Sustainable Practices Policy and UC Berkeley Sustainability Plan, including the Carbon Neutrality Initiative, which aligns reductions at the UC system with SB 32 and long-term goals identified in the 2017 Scoping Plan. Future development projects at UC Berkeley would be required to comply with these GHG emissions reduction measures because they are statewide strategies as well as with the UC Berkeley Sustainability Plan and the UC Sustainable Practices Policy. Therefore, implementation of the proposed LRDP Update would not conflict with the Scoping Plan or other general State regulations adopted for the purposes of reducing GHG emissions.

Plan Bay Area

Plan Bay Area is the Bay Area's regional transportation plan to achieve the passenger vehicle emissions reductions identified under SB 375. Plan Bay Area 2040 is the current SCS for the Bay Area and was adopted July 26, 2017. ABAG and MTC are currently in the process of updating Plan Bay Area. Adoption of Plan Bay Area 2050 by ABAG and MTC is scheduled for Fall 2021.⁵¹ In addition to significant transit and roadway performance investments to encourage focused growth, Plan Bay Area 2040 directs funding to neighborhood active transportation and complete streets projects, climate initiatives, lifeline transportation

⁵¹ Metropolitan Transportation Commission (MTC). 2020, March. Key Phases of Plan Bay Area 2050. <https://www.planbayarea.org/about/key-phases-plan-bay-area-2050>

and access initiatives, safety programs, and PDA planning. The proposed LRDP Update would be consistent with the overall goals of Plan Bay Area 2040 in concentrating new development in locations where there is existing infrastructure and transit at the UC Berkeley campus. Under the proposed LRDP Update, UC Berkeley would continue its existing transit demand management (TDM) programs, such as priced permit parking, carpool/vanpool incentives, transit subsidies, and the Bear Transit shuttles, and would expand and add to the TDM programs to increase opportunities for employees and students to get to and from the campus by means other than single-occupant vehicles. (See also Chapter 5.15, Transportation, Impact TRAN-1). The proposed LRDP Update's Principle 3 and underlying goals, listed in Chapter 3, Project Description, of this Draft EIR, also support sustainable transportation modes. The proposed LRDP Update includes several objectives that support sustainable transportation modes, ensuring that implementation of the proposed LRDP Update would not conflict with the land use concept plan in Plan Bay Area. Objectives relevant to sustainable transportation include:

- **Campus Park Land Use Objective**
 - Prioritize pedestrian and bicycle travel when completing major renovations or siting new buildings. Consider locating uses that attract visitors on the edge of the Campus Park or in the City Environs, and co-locate related academic functions to reduce the need for intercampus travel by modes other than walking or bicycling.
- **Hill Campus East Land Use Objectives**
 - Support and maintain the existing housing and campus life facilities in the Hill Campus West with selective renovation, expansion, or redevelopment on previously developed sites. Land uses in this zone should leverage its proximity to the Campus Park.
- **City Environs Properties Land Use Objectives**
 - Complement and reinforce surrounding land use patterns to the extent possible, including leveraging available transportation resources such as the Downtown Berkeley BART station, when locating uses that benefit from proximity to regional transit, such as administrative functions, and public attractions, including but not limited to museums, concert halls, athletics and recreation facilities, and other event venues.
- **Mobility Systems Objectives**
 - Prioritize more sustainable and carbon neutral transportation solutions for campus mobility needs, and include transportation demand management (TDM) strategies when planning for new campus facilities.
 - Prioritize pedestrian and bicycle travel within the Campus Park and to adjacent university properties by removing opportunities for unnecessary vehicle travel, redesigning potential areas of conflicts to improve and prioritize pedestrian and bicycle safety, and including pedestrian and bicycle facilities in new projects, to the extent feasible. Maintain necessary emergency and handicap accessible vehicle access to university properties while prioritizing pedestrian and bicycle access.
- **Infrastructure, Resilience, and Emergency Systems Objectives**
 - Support UC system and UC Berkeley goals to reduce energy consumption and achieve carbon neutrality by transitioning to carbon-free energy supply sources and evaluating on-site renewable energy generation.
 - Plan building renovations and design new buildings to minimize energy consumption and meet and strive to exceed UC Sustainable Practices Policy energy requirements, through strategies such as

passive ventilation, optimal building orientation and landscape design. Consider opportunities for reducing embodied carbon, when aligned with programmatic needs and other improvements.

- Collaborative Planning Mobility Objectives
 - Continue to partner with the City of Berkeley and transportation service providers to provide efficient, reliable, and safe transportation service to the campus.
 - Continue to plan UC Berkeley mobility services to complement, rather than compete with other local transportation services.
 - Collaborate with the City of Berkeley and Lawrence Berkeley National Laboratory on mobility initiatives of shared interest.
 - Work with the City of Berkeley and other partners on projects and initiatives that enhance pedestrian, bicycle, transit, and vehicular connections and safety between university properties and surrounding areas.
 - When locating parking, consider opportunities for shared parking facilities that serve the campus community during the day, and other community needs in the evening.
 - Explore further opportunities to improve transportation demand management (TDM) outcomes that reduce vehicle trips to the campus and make progress toward UC Berkeley sustainability goals.

University of California and UC Berkeley GHG Reduction Plans

The proposed LRDP Update is an overarching plan to guide long-term development of the entire LRDP Planning Area. Growth on the UC Berkeley campus is governed by the policies and initiatives of the UCOP and UC Berkeley, including:

- UC Sustainable Practices Policy (2020)
- UC Berkeley CAP (2009)
- University of California Carbon Neutrality Initiative (2013)
- UC Berkeley Carbon Neutrality Planning Framework (2016)
- UC Berkeley Sustainability Plan (2020)

As identified in Section 5.7.1.2, Regulatory Framework, under subheading “University of California,” the UC Berkeley Sustainability Plan outlines strategies to achieve the state, UCOP, and UC Berkeley GHG reduction goals. UC Berkeley’s sustainability goals exceed those identified in the UC Sustainable Practices Policy for Scope 3 sources (see Table 5.7-6, UC Berkeley 2020 Sustainability Plan Goals, which includes a comparison of the UC Sustainable Practices Policy and UC Berkeley Sustainability Plan goals). It should be noted that over the life of the proposed LRDP Update, projects would be bound to the policies and plans in place at the time of project initiation.

LRDP Update Consistency with GHG Reduction Plans/Long-Term GHG Reduction Goals

To achieve the long-term GHG reduction goals outlined under SB 32, Executive Order (EO) S-03-05, EO B-55-18, and UCOP and UC Berkeley carbon neutrality goals, UC Berkeley conducts annual GHG emissions inventories and implements the UCOP and UC Berkeley sustainability and policy initiatives described above. Table 5.7-10, UC Berkeley LRDP GHG Emissions 2036 Forecast: Carbon Neutrality Threshold, forecasts GHG emissions at UC Berkeley with implementation of these sustainability plans. Consistent with the UC Sustainable Practices Policy, Scope 1 and 2 emissions would be reduced or offset by 2025. Carbon offsets (compliance offsets and/or voluntary offsets) would be necessary to achieve the carbon neutrality goals.

Compliance offsets are only applicable for sources covered under the Cap and Trade Program (i.e., cogeneration plant and stationary sources).

TABLE 5.7-10 UC BERKELEY LRDP GHG EMISSIONS 2036 FORECAST: CARBON NEUTRALITY THRESHOLD

Scope	Sector	MTCO ₂ e/Year	
		2036 BAU	2036 Sustainability Scenario
1	Cogeneration Plant ^a	111,393	0
	UC Berkeley Campus Fleet ^b	1,581	0
	Fuel Use	17,651	0
	Refrigerants	1,173	0
2	Purchased Electricity ^c	4,036	0
3	Student Commute ^d	3,168	3,168
	Faculty and Staff Commute ^d	14,348	14,348
	Visitors ^d	4,080	4,080
	Vendors ^d	75	75
	Air Travel ^e	27,946	27,946
	Solid Waste	902	902
	Water/Wastewater	480	480
Total		187,341	51,507
2036 Carbon Neutrality Goal (67% Reduction)		64,199	64,199
Additional Offsets Potentially Needed by 2036 for a Trajectory for Carbon Neutrality by 2045		122,635	-13,199

Notes: Pursuant to the UC Sustainable Practices Policy, GHG offsets will be purchased to meet the requirement of carbon neutrality for Scope 1 and 2 emissions beginning in 2025.

a. ARUP. 2020, July 21. University of California, Berkeley Campus Energy Plan Additional Options Analysis. The adjusted BAU scenario is based on natural gas use associated with scenario “o” (existing plant with equipment replacement and maintenance) and the with Sustainability Plan based on scenario 12 (Hybrid Nodal Recovery) from the 2020 Campus Energy Plan report.

b. In accordance with the UC Sustainable Practices Policy, the campus fleet will run on carbon neutral sources by 2025. In accordance with this policy, GHG emissions from the campus fleet are assumed to be zero. To meet the 2025 carbon neutrality goal, voluntary carbon offsets will be acquired until such time the fleet is transitioned to carbon-free.

c. Pursuant to the UC Berkeley Sustainability Plan, UC Berkeley will procure 100 percent clean electricity by 2020 for applicable accounts. Under the UC Sustainable Practices Policy, UC Berkeley also will reduce energy use intensity of campus space by 2 percent annually.

d. Transportation emissions are based on annual VMT provided by Fehr & Peers and modeled using EMFAC2017. Modeling accounts for the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule; and therefore, emission rates used in the 2036 analyses are conservative.

e. In accordance with the UC Sustainable Practices Policy, UC Berkeley will be carbon neutral from business air travel by 2050 or sooner. Under UC Berkeley’s Sustainability Plan, UC Berkeley will strive to reduce emissions by 10 percent by 2025. To meet the carbon neutrality goal, carbon offsets will be acquired.

f. Emissions forecasted based on the emission rates for solid waste and water/wastewater provided by UC Berkeley for the 2018 emission inventory.

Source: PlaceWorks, 2021 (see Appendix C1, LRDP Update Air Quality and Greenhouse Gas Modeling).

The UC Sustainable Practices Policy requires Scope 3 mobile source and air travel emissions to be offset to net zero beginning in 2050. UC Berkeley’s Sustainability Plan includes expanded Scope 3 carbon neutrality goals for solid waste and water/wastewater. The offset year of 2050 was selected at the time the University Carbon Neutrality Initiative was adopted in 2013 based on careful consideration of recommendations from leading scientists and the State regarding the need to achieve an 80 percent reduction in 1990 emissions levels by 2050. However, California’s commitment to carbon neutrality by 2045 was accelerated under EO B-55-18. Thus, the goal post for global GHG emissions reduction has advanced from 2050 to 2045.

Consequently, this EIR considers a trajectory to achieve carbon neutrality for all sources by 2045. Attainment of the State's long-term climate change goal of carbon neutrality (under EO B-55-18) will require deep emissions reductions across all sectors.

The UC Sustainable Practices Policy and UC Berkeley Sustainability Plan require Scope 1 and 2 sources of emissions to be carbon neutral by 2025. As shown in Table 5.7-10, UC Berkeley LRDP GHG Emissions 2036 Forecast: Carbon Neutrality Threshold, under the Sustainability Scenario, compliance with the UC Sustainable Practices Policy, which requires that 100 percent of Scope 1 and 2 emissions be offset, would place UC Berkeley on a trajectory toward reaching the long-term carbon neutrality targets. The UC Berkeley Sustainability Plan also has a target of 10 percent reduction of emissions from business air travel by 2025. Because the buildout year is the 2036–37 school year, this EIR considers a trajectory to achieve the 2045 goal for year 2036 (i.e., 67 percent of total emissions offset at or before 2036). In order to ensure that the interim carbon neutrality threshold aligns with the UC Sustainable Practices Policy and UC Berkeley Sustainability Plan, voluntary carbon offsets may be required to ultimately achieve the State's (EO B-55-18) and UCOP's and UC Berkeley's carbon neutrality goals. Because total 2036 BAU emissions are projected to exceed the interim carbon neutrality goal based on carbon neutrality for all sources by 2045, this exceedance could affect the State's ability to achieve its carbon neutrality goals and UC Berkeley's carbon neutrality goals in the absence of on-campus reductions identified in the Sustainability Scenario and/or purchase of voluntary carbon offsets required by the UC Sustainable Practices Policy.

Impact GHG-2: GHG emissions resulting from the proposed LRDP Update could exceed the UCOP and UC Berkeley carbon neutrality goals derived from the State's long-term climate change goals under EO B-55-18.

Mitigation Measure GHG-2: UC Berkeley shall make the following separate, though overlapping, greenhouse gas (GHG) emission reduction commitments (1) By 2036, UC Berkeley shall offset 67 percent of GHG emissions; and (2) By 2045 and thereafter, UC Berkeley shall achieve carbon neutrality (100 percent offset). Years 2036 and 2045 reduction targets are required to be achieved based on actual emission calculations completed in the future, as discussed below under "Measure Monitoring and Reporting," and may therefore change over time.

UC Sustainable Practices Policy. UC Berkeley will purchase voluntary carbon credits as the final action to reach the GHG emission reduction targets outlined in the UC Sustainable Practices Policy. As part of the University Carbon Neutrality Initiative, internal guidelines have been developed to ensure that any use of credits for this purpose will result in additional, verified GHG emissions reductions from actions that align as much as possible with UC Berkeley's research, teaching, and public service mission.

Emissions Reduction Options. UC Berkeley shall do one or more of the following options to reduce GHG emissions generated by the proposed LRDP Update to achieve the measure performance standards.

1. **Option 1: On-site GHG Reduction Actions.** Implement on-site GHG reduction actions at UC Berkeley specified in the UC Sustainable Practices Policy and UC Berkeley sustainability plans, standards and policies.
2. **Option 2: Voluntary and UC Developed Carbon Offsets.** In addition to compliance offsets required by cap and trade, UC Berkeley may purchase GHG carbon offsets from a voluntary GHG

carbon offset provider with an established protocol that requires projects generating GHG carbon offsets to demonstrate that the reduction of GHG emissions are real, permanent, quantifiable, verifiable, enforceable, and additional (per the definition in California Health and Safety Code Sections 38562(d)(1) and (2)). UC Berkeley may purchase GHG carbon offsets from UC developed voluntary carbon offset projects that are real, permanent, quantifiable, peer verifiable, enforceable, and additional. Definitions for these terms follow.

- a. **Real:** Estimated GHG reductions should not be an artifact of incomplete or inaccurate emissions accounting. Methods for quantifying emission reductions should be conservative to avoid overstating a project's effects. The effects of a project on GHG emissions must be comprehensively accounted for, including unintended effects (often referred to as "leakage").⁵²
- b. **Additional:** GHG reductions must be additional to any that would have occurred in the absence of the Climate Action Reserve, or of a market for GHG reductions generally. "Business as usual" reductions (i.e., those that would occur in the absence of a GHG reduction market) should not be eligible for registration.
- c. **Permanent:** To function as offsets to GHG emissions, GHG reductions must effectively be "permanent." This means, in general, that any net reversal in GHG reductions used to offset emissions must be fully accounted for and compensated through the achievement of additional reductions.
- d. **Quantifiable:** The ability to accurately measure and calculate GHG reductions or GHG removal enhancements relative to a project baseline in a reliable and replicable manner for all GHG emission sources, GHG sinks, or GHG reservoirs included within the offset project boundary, while accounting for uncertainty and activity-shifting leakage and market-shifting leakage.
- e. **Verified:** GHG reductions must result from activities that have been verified. Verification requires third-party (or peer review if UC-developed voluntary carbon offset projects) of monitoring data for a project to ensure the data are complete and accurate.
- f. **Enforceable:** The emission reductions from offset must be backed by a legal instrument or contract that defines exclusive ownership and can be enforced within the legal system in the country in which the offset project occurs or through other compulsory means. Please note that for this mitigation measure, only credits originating within the United States are allowed.

Mitigation Reporting. As a CARB-covered entity, UC Berkeley will ensure emissions generated by the cogeneration plant and other stationary sources comply with CARB's Cap and Trade Program. Likewise, UC Berkeley will implement the UC Sustainable Practices Policy to meet the requirement of carbon neutrality for Scope 1 and 2 emissions by 2025 and carbon neutrality for Scope 3 emissions by 2045, as described above. These commitments will be incorporated into UC Berkeley's annual GHG inventory, which is used to track GHG emissions and sources on the UC Berkeley campus. GHG reductions achieved by the on-site and off-site actions will be incorporated into the annual GHG inventory and

⁵² To ensure that GHG reductions are real, CARB requires the reduction be a direct reduction within a confined project boundary.

annual reporting practices established by the UC Sustainable Practices Policy. As part of this reporting, the estimated annual emissions shall then be compared to the measure performance standards (i.e., 67 percent reduction by 2036 and 100 percent by 2045) to determine the level of additional GHG reductions (if any) that may be required.

Significance with Mitigation: Less than significant. Mitigation Measure GHG-2 identifies actions that will achieve GHG reductions necessary to achieve UC Berkeley's carbon neutrality goals. GHG-2 would ensure that UC Berkeley would reduce or offset GHG emissions to "net zero" prior to year 2045. The mitigation also expands the UC's carbon neutrality commitments, requiring UC Berkeley to achieve carbon neutrality beginning in 2045 (i.e., five years earlier). Mitigation Measure GHG-2 will be implemented alongside the UC Sustainable Practices Policy and University Carbon Neutrality Initiative, so that any additional GHG reductions needed to meet the 2036 and 2045 performance standards will be achieved through the strategies in the mitigation. As identified in Table 5.7-10, UC Berkeley LRDP GHG Emissions 2036 Forecast: Carbon Neutrality Threshold, purchase of carbon offsets for Scope 1 and 2 sources would place UC Berkeley on a trajectory at the 2036–37 horizon to achieve carbon neutrality by 2045. Because Mitigation Measure GHG-2 would reduce GHG emissions resulting from implementation of the proposed LRDP Update by a minimum of 67 percent below 2018 emissions levels by 2036 and carbon neutral by 2045, the project would not conflict with UC Berkeley's carbon neutrality goals or the State's SB 32 reduction goals. Consequently, this impact is less than significant with mitigation.

Housing Project #1 and #2

The following discusses project consistency for Housing Projects #1 and #2 with applicable plans adopted for the purpose of reducing GHG emissions, which include CARB's Scoping Plan and MTC/ABAG's Plan Bay Area 2040.

CARB Scoping Plan

CARB's Climate Change Scoping Plan outlines the State's strategies to reduce GHG emissions in accordance with the targets established under AB 32 and SB 32. The Scoping Plan is applicable to State agencies and is not directly applicable to cities/counties and individual projects. Nonetheless, the Scoping Plan has been the primary tool that is used to develop performance-based and efficiency-based CEQA criteria and GHG reduction targets for climate action planning efforts.

Statewide strategies to reduce GHG emissions in the 2017 Climate Change Scoping Plan include: implementing SB 350, which expands the RPS to 50 percent by 2030 and doubles energy efficiency savings; expanding the Low Carbon Fuel Standards (LCFS) to 18 percent by 2030; implementing the Mobile Source Strategy to deploy zero-emissions electric vehicle buses and trucks; implementing the Sustainable Freight Action Plan; implementing the Short-Lived Climate Pollutant Reduction Strategy, which reduces methane and hydrofluorocarbons to 40 percent below 2013 levels by 2030 and black carbon emissions to 50 percent below 2013 levels by 2030; continuing to implement SB 375; creating a post-2020 Cap-and-Trade Program; and developing an Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Statewide strategies to reduce GHG emissions include the low carbon fuel standards, California Appliance Energy Efficiency regulations, California Renewable Energy Portfolio standard, changes in the CAFE standards, and other early action measures as necessary to ensure the State is on target to achieve the GHG emissions reduction goals of AB 32 and SB 32. New buildings are required to comply with the current Building Energy Efficiency Standards and CALGreen. Housing Projects #1 and #2 would each be required to comply with these GHG emissions reduction measures since they are statewide strategies. The project's GHG emissions would be reduced from compliance with statewide measures that have been adopted since AB 32 and SB 32 were adopted. Therefore, impacts would be *less than significant*.

Plan Bay Area

As discussed, as part of the implementing framework for Plan Bay Area 2040, local governments have identified PDAs to focus growth. Both Housing Projects #1 and #2 are in the Berkeley Downtown PDA.⁵³ Based on the scope and nature of Housing Projects #1 and #2, while the construction and operation of residential housing would generate new trips to the project site, both of the proposed projects would accommodate the existing population of UC Berkeley, and neither project would be a growth-inducing project. Thus, each of the projects would be consistent with the overall goals of Plan Bay Area 2040 in concentrating new development in locations where there is existing infrastructure. Neither Housing Project #1 or #2 would conflict with the land use concept plan in Plan Bay Area 2040, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

GHG-3	The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in a less-than-significant cumulative impact with respect to greenhouse gas emissions.
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LRDP Update

Project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Therefore, impacts under Impact GHG-1 are not project-specific impacts to global warming, but are the proposed project's contribution to this cumulative impact.

The analysis in Impact GHG-1 uses a net zero increase threshold over existing emissions. Consideration of a project's climate change impact, therefore, is essentially an analysis of a project's contribution to a cumulatively significant global impact through its emission of GHGs. While it is possible to examine the quantity of GHGs that would be emitted from individual project sources, it is not currently possible to link GHGs emitted from a specific source or location to particular global climate changes.

⁵³ Metropolitan Transportation Commission and Association of Bay Area Governments, 2017. Plan Bay Area 2040 Plan. Priority Development Areas (Plan Bay Area 2040) ArcGIS. <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=56ee3b41d6a242e5a5871bo43ae84dc1>, accessed November 21, 2020.

Both BAAQMD and the California Air Pollution Control Officers Association consider GHG impacts to be exclusively cumulative impacts, in that no single project could, by itself, result in a substantial change in climate.^{54 55} Therefore, the evaluation of cumulative GHG impacts presented above evaluates whether the proposed LRDP Update would make a considerable contribution to cumulative climate change effects.

Therefore, the analysis in Impact GHG-1 considers the potential cumulative impacts of the proposed LRDP Update related to GHG emissions. Implementation of the proposed LRDP Update Mitigation Measure GHG-2 would result in decreased annual GHG emissions compared to existing conditions, consistent with UC Berkeley's carbon neutrality goals. Implementation of the proposed LRDP Update would not be cumulatively considerable. Accordingly, this impact would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

Project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Therefore, impacts under Impact GHG-1 are not project-specific impacts to global warming, but are the contribution to this cumulative impact from Housing Projects #1 and #2. As described under impact discussion GHG-1, the projects would not contribute a significant amount of GHG emissions or contribute considerably to existing cumulative emissions impacts. UC tracks and monitors annual GHG emissions for UC Berkeley to ensure the targets identified in the UC Sustainable Practices Policy. Therefore, GHG emissions related to Housing Projects #1 and #2 and their contribution to global climate change would not be cumulatively considerable, and GHG emissions impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

⁵⁴ Bay Area Air Quality Management District, 2017, CEQA Guidelines May 2017.

⁵⁵ California Air Pollution Control Officer's Association. 2018, January. CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act.

5.8 HAZARDS AND HAZARDOUS MATERIALS

This chapter describes the potential hazards and hazardous materials impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and setting, identifies criteria used to determine impact significance, provides an analysis of the potential hazards and hazardous materials impacts, and identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts.

This chapter also addresses impacts related to the use of research materials that do not meet the standard criteria of hazardous materials but whose presence and use at UC Berkeley are a matter of concern to the surrounding community. These include chemicals, biohazardous material, transgenic materials, radioactive material, radiation producing machines and non-ionizing radiation.^{1,2}

A discussion of hazards associated with wildland fires is provided in Chapter 5.18, Wildfire. The potential for impacts from toxic air emissions is considered in Chapter 5.2, Air Quality. Hazardous materials data is included in Appendix I, Hazardous Materials Data, of this draft environmental impact report (Draft EIR).

5.8.1 ENVIRONMENTAL SETTING

5.8.1.1 REGULATORY FRAMEWORK

International Regulations

International Air Transport Association

The International Air Transport Association (IATA) is the trade association for the world's airlines, representing some 290 airlines or 82 percent of total air traffic. The IATA supports aviation activities and help formulate industry policy on critical aviation issues.³

Dangerous Goods Regulations

The IATA's Dangerous Goods Regulations (DGR) is an industry organization's guidance document that provides information for the international transportation of dangerous goods by air. Dangerous goods include infectious agents, chemicals, and research animals. The DGR contains guidance on the classification,

¹ Transgenic organisms include microorganisms, plants, and animals that have been genetically engineered or modified using recombinant DNA techniques.

² Non-ionizing radiation (NIR) is radiative energy that is not created by radioactive materials. These sources include lasers, large magnets, microwave generators, and radio-frequency radiation. In general, NIR tends to be less hazardous to humans than radiation generated from radioactive materials. Additionally, NIR sources used in research present a potential human health hazard primarily to those in the lab and not members of the public.

³ International Air Transport Association, 2021, About Us, <https://www.iata.org/en/about/>, accessed January 26, 2021.

packing, marking, labeling, and documenting of shipments of dangerous goods to ensure they are safe to travel.

Federal Regulations

United States Environmental Protection Agency

The United States Environmental Protection Agency (USEPA) is the primary federal agency that regulates hazardous materials and waste. In general, the USEPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The agency is responsible for researching and setting national standards for a variety of environmental programs, delegating the responsibility for issuing permits, and monitoring and enforcing compliance by states and Native American tribes. USEPA programs promote handling hazardous wastes safely, cleaning up contaminated land, and reducing waste volumes through such strategies as recycling. California falls under the jurisdiction of USEPA Region 9. Under the authority of the Resource Conservation and Recovery Act (RCRA) and in cooperation with State and tribal partners, the USEPA Region 9 Waste Management and Superfund Divisions manage programs for site environmental assessment and cleanup, hazardous and solid waste management, and underground storage tanks.

United States Department of Transportation

The United States Department of Transportation (USDOT) has the regulatory responsibility for the safe transportation of hazardous materials between states and internationally. The USDOT regulations govern all means of transportation except for packages shipped by mail, which are covered by United States Postal Service regulations. The federal RCRA of 1976 (described below) imposes additional standards for the transport of hazardous wastes.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) requires specific training for hazardous materials handlers, provides information to employees who may be exposed to hazardous materials, and acquires material safety data sheets from materials manufacturers. The material safety data sheets describe the risks and proper handling and procedures related to specific hazardous materials. Employee training must include response and remediation procedures for hazardous materials releases and exposures.

Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984

Federal hazardous waste laws are generally promulgated under the RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984. These laws provide for the “cradle to grave” regulation of hazardous wastes. Any business, institution, or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused, or disposed. The Department of Toxic Substance Control (DTSC) is responsible for implementing the RCRA program as well as California’s own hazardous waste laws, which are collectively known as the Hazardous Waste Control Law. Under the Unified Program, the California Environmental Protection Agency (CalEPA) has in turn

delegated enforcement authority to the City of Berkeley Toxics Management Division for State law regulating hazardous waste producers or generators.⁴

Emergency Planning Community Right-to-Know Act

The Emergency Planning Community Right-to-Know Act (EPCRA), also known as SARA Title III, was enacted in October 1986. This law requires State and local governments to plan for chemical emergencies. Reported information is made publicly available so that interested parties can become informed about potentially dangerous chemicals in their community. EPCRA Sections 301 through 312 are administered by USEPA's Office of Emergency Management. USEPA's Office of Information Analysis and Access implements the EPCRA Section 313 program. In California, SARA Title III is implemented through the California Accidental Release Prevention (CalARP) program.

Hazardous Materials Transportation Act

The USDOT regulates hazardous materials transportation under Title 49 of the Code of Federal Regulations (CFR). State agencies that have primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies are the Federal Aviation Agency, California Highway Patrol (CHP), and the California Department of Transportation (Caltrans). The California State Fire Marshal's Office has oversight authority for hazardous materials liquid pipelines. The California Public Utilities Commission has oversight authority for natural gas pipelines in California. These agencies also govern permitting for hazardous materials transportation.

Federal Response Plan

The Federal Response Plan of 1999 is a signed agreement among 27 federal departments and agencies and other resource providers, including the American Red Cross, that: 1) provides the mechanism for coordinating delivery of federal assistance and resources to augment efforts of State and local governments overwhelmed by a major disaster or emergency; 2) supports implementation of the Robert T. Stafford Disaster Relief and Emergency Act as well as individual agency statutory authorities; and 3) supplements other federal emergency operations plans developed to address specific hazards. The Federal Response Plan is implemented in anticipation of a significant event likely to result in a need for federal assistance or in response to an actual event requiring federal assistance under a Presidential declaration of a major disaster or emergency. The Federal Response Plan is part of the National Response Framework, which was most recently updated on March 22, 2008.

The Stafford Act

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) of 1988 authorizes federal government assistance for emergencies and disasters when State and local capabilities are

⁴ City of Berkeley, Toxics Management Division, https://www.cityofberkeley.info/Planning_and_Development/Toxics_Management/CUPA_Overview.aspx, accessed August 25, 2020.

exceeded. The Stafford Act forms the statutory authority for most federal disaster response activities, especially as they relate to the Federal Emergency Management Agency and its programs.

National Response Framework

The 2016 National Response Framework, published by the United States Department of Homeland Security, is a guide for the nation to respond to all types of disasters and emergencies. This framework describes specific authorities and best practices for managing incidents that range from serious local to large-scale terrorist attacks to catastrophic natural disasters. In addition, the 2016 National Response Framework describes the principles, roles, responsibilities, and coordinating structures for responding to an incident and further describes how response efforts integrate with those of the other mission areas.

Business Plan Act

Both the federal government⁵ and the State of California⁶ require all businesses that handle more than a specified amount of hazardous materials or extremely hazardous materials—termed a reporting quantity—to submit a hazardous materials business plan (HMBP) to the local certified Unified Program agency (CUPA).

An HMBP must be submitted by businesses that handle a hazardous material or a mixture containing a hazardous material in quantities⁷ equal to or greater than:

- 500 pounds of a solid
- 55 gallons of a liquid
- 200 cubic feet of a compressed gas at standard temperature and pressure
- The federal Threshold Planning Quantity for Extremely Hazardous Substances
- Radioactive materials in quantities for which an emergency plan is required per Parts 30, 40, or 70 of the CFR, Title 10, Chapter 1

The business plan must include the type and quantity of hazardous materials, a site map, risks of using these materials, spill prevention, emergency response, employee training, and emergency contacts.

National Institute of Health Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules

The purpose of the National Institute of Health (NIH) Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules is to specify the biosafety practices and containment principles for constructing and handling recombinant nucleic acid molecules; synthetic nucleic acid molecules, including those that are chemically or otherwise modified but can base pair with naturally occurring nucleic acid molecules; and cells, organisms, and viruses containing such molecules. All UC Berkeley researchers working

⁵ Code of Federal Regulations, EPA, SARA, and Title III.

⁶ California State Health and Safety Code, Division 20, Chapter 6.95, Sections 25500–25520; California Code of Regulations, Title 19, Chapter 2, Sub-chapter 3, Article 4, Sections 2729–2734.

⁷ The City of Berkeley imposes additional hazardous materials business plan inventory reporting requirements (Berkeley Municipal Code Section 15.12.050)

with recombinant or synthetic nucleic acid molecules must follow the NIH guidelines. Compliance is mandatory, and it is the responsibility of each investigator to make sure that their laboratory is in compliance.

Animal Welfare Act

The Animal Welfare Act of 1966 (and its subsequent amendments) is the primary federal law that governs the use of animals in research, testing, and teaching in the United States. This act is implemented and enforced by the United States Department of Agriculture (USDA). It provides the basis for the regulatory authority given to the USDA to ensure the welfare of animal species that are covered by the act and used in regulated activities. Compliance with the regulations is ensured by the Institutional Animal Care and Use Committees (IACUC). The primary functions of IACUC are reviewing and inspecting all aspects of an institution's animal care and use program, including all animal facilities and animal care records; reviewing animal use protocols; reviewing and investigating complaints about animal use; and making recommendations to the Institutional Official. This is to ensure compliance with all regulations and policies and allows for interaction between the IACUC and institutional staff members. At UC Berkeley, the Animal Care and Use Committee (ACUC) serves as the IACUC.

United States Public Health Service Policy on the Humane Care and Use of Laboratory Animals

The United States Public Health Service Policy on the Humane Care and Use of Laboratory Animals requires institutions to establish and maintain proper measures to ensure the appropriate care and use of all animals involved in research, research training, and biological testing conducted or supported by the Public Health Service.

National Animal Welfare Guidelines and Accreditation

The Assessment and Accreditation of Laboratory Animal Care (AAALAC) International is a private nonprofit organization that promotes the humane treatment of animals in science through a voluntary accreditation program. This program is conducted in addition to complying with local, State, and federal laws that regulate animal research. By undergoing the voluntary accreditation process, the research programs demonstrate that they not only meet the minimum regulatory requirements but actually exceed them to achieve excellence in animal care and use. AAALAC International relies on the Guide for the Care and Use of Laboratory Animals (published by the National Research Council) as its primary standard for evaluation of laboratory animal care and use programs. As a condition of accreditation, AAALAC International requires correction of any deficiencies in either programs or physical facilities that it observes during site visits.

Code of Federal Regulations Title 29 Sections 1926.62 and 1910.120

CFR, Title 29, Section 1926.62, sets standards for occupational health and environmental controls for lead exposure in construction, regardless of the lead content of paints and other materials. The standards include requirements addressing exposure assessment, methods of compliance, respiratory protection, protective clothing and equipment, hygiene facilities and practices, medical surveillance, medical removal protection, employee information and training, signs, recordkeeping, and observation and monitoring.

Additionally, the removal of polychlorinated biphenyls (PCBs) and mercury-containing light ballasts during demolition and renovation work can only be conducted by workers with hazardous waste operations and emergency response (HAZWOPER) training, as outlined in CFR, Title 29, Section 1910.120.

Code of Federal Regulations Title 40 Parts 61, 761, and 273

CFR, Title 40, Section 61, Subpart M sets forth emissions standards for asbestos from demolition and renovation activities, and for waste disposal from such activities.

The removal of PCBs and mercury-containing light ballast is regulated by the requirements of CFR, Title 40, Section 761 and CFR, Title 40, Section 273.

State Regulations

California Environmental Protection Agency

One of the primary State agencies that regulates hazardous materials is the CalEPA. CalEPA is authorized by the USEPA to enforce and implement certain federal hazardous materials laws and regulations. The California DTSC, a department of the CalEPA, protects California and Californians from exposure to hazardous waste, primarily under the authority of the RCRA and the California Health and Safety Code.⁸ The DTSC requirements include the need for written programs and response plans, such as hazardous materials management plans. The DTSC programs include dealing with aftermath cleanups of improper hazardous waste management; evaluation of samples taken from sites; enforcement of regulations regarding use, storage, and disposal of hazardous materials; and encouragement of pollution prevention.

California Division of Occupational Safety and Health

Like OSHA at the federal level, the California Division of Occupational Safety and Health (Cal/OSHA) is the responsible State agency for ensuring workplace safety. Cal/OSHA assumes primary responsibility for the adoption and enforcement of standards regarding workplace safety and safety practices. If a work site is contaminated, a site safety plan must be crafted and implemented to protect the safety of workers. Site safety plans establish policies, practices, and procedures to prevent the exposure of workers and members of the public to hazardous materials originating from the contaminated site or building.

California Office of Emergency Services

The California Office of Emergency Services (Cal OES) was established as part of the Governor's Office on January 1, 2009. It was created pursuant to Assembly Bill 38, which merged the duties, powers, purposes, and responsibilities of the former Governor's Emergency Management Agency with those of the Governor's Office of Homeland Security. Cal OES is responsible for the coordination of overall State agency response to major disasters in support of local government. The agency is responsible for ensuring the State's

⁸ Hazardous Substance Account, Chapter 6.5 (Section 25100 et seq.) and the Hazardous Waste Control Law, Chapter 6.8 (Section 25300 et seq.) of the Health and Safety Code.

readiness to respond to and recover from all hazards— natural, human-caused, emergencies, and disasters—and for assisting local governments in their emergency preparedness, response, recovery, and hazard mitigation efforts.

California Department of Transportation and California Highway Patrol

Caltrans and the CHP are the two State agencies that have primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies. Caltrans manages more than 50,000 miles of California’s highways and freeways, provides intercity rail services, permits more than 400 public-use airports and special-use hospital heliports, and works with local agencies. Caltrans is also the first responder for hazardous material spills and releases that occur on highways, freeways, and intercity rail lines.

The CHP enforces hazardous materials and hazardous waste labeling and packing regulations designed to prevent leakage and spills of materials in transit and to provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP, which conducts regular inspections of licensed transporters to ensure regulatory compliance.

The State of California regulates the transportation of hazardous waste originating or passing through the state. Common carriers are licensed by the CHP, pursuant to Section 32000 of the California Vehicle Code. This section requires licensing every motor (common) carrier that transports, for a fee, in excess of 500 pounds of hazardous materials at one time, and every carrier, if not for hire, that carries more than 1,000 pounds of hazardous material of the type requiring placards. Common carriers conduct a large portion of the business in the delivery of hazardous materials.

California Department of Public Health Radiologic Health Branch

The Radiologic Health Branch (RHB) is within the Radiation Safety and Environmental Management Division of the Department of Public Health. The RHB enforces the laws and regulations addressing ionizing radiation, including radioactive material, to protect the public, radiation workers, and the environment. RHB is responsible for providing public health functions associated with administering a radiation control program. This includes licensing of radioactive materials, registration of X-ray-producing machines, certification of medical and industrial X-ray and radioactive material users, inspection of facilities using radiation, investigation of radiation incidents, and surveillance of radioactive contamination in the environment.⁹

⁹ California Department of Public Health, December 31, 2020, Radiologic Health Branch, <https://www.cdph.ca.gov/Programs/CEH/DRSEM/Pages/RHB.aspx>, accessed January 26, 2021.

State Water Resources Control Board

In California, the State Water Resources Control Board (SWRCB) has broad authority over water quality control issues for the state. The SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the State by the federal government under the Clean Water Act.

SWRCB's Underground Storage Tank (UST) program protects the public health and safety, and the environment from releases of petroleum and other hazardous substances from USTs. Program elements include:

- **Leak Prevention:** This program element includes requirements for tank installation, construction, testing, leak detection, spill containment, and overfill protection.
- **Cleanup:** Cleanup of leaking tanks often involves a soil and groundwater investigation and remediation, under the direction of a regulatory agency.
- **Enforcement:** The SWRCB aids local agencies enforcing UST requirements.
- **Tank Tester Licensing:** Tank integrity testing is required by law, must meet the requirements of the SWRCB, and must be conducted by State licensed tank testers.¹⁰

California Code of Regulations Title 8 Section 5191—Occupational Exposure to Hazardous Chemicals in Laboratories

California's Code of Regulations (CCR) Title 8 Section 5191, Occupational Exposure to Hazardous Chemicals in Laboratories, requires that all laboratories have a written chemical hygiene plan as a fundamental chemical safety plan for the laboratory. Chemical hygiene plans are written programs that set forth procedures, equipment, personal protective equipment, and work practices that are capable of protecting employees from the health hazards presented by hazardous chemicals used in laboratories.

California Code of Regulations Title 8 Section 5085—Nonionizing Radiation

The CCR Title 8, Section 5085, Nonionizing Radiation, establishes maximum permissible exposure values for frequencies between 3 megahertz and 300 gigahertz. Compliance with CCR Title 8 is required for all employers in the State of California. Enforcement of these regulations falls to Cal/OSHA, which inspects UC Berkeley facilities to determine compliance with Title 8.¹¹

California Code of Regulations Title 17, Division 1, Chapter 5, Subchapter 4—Radiation

The CCR Title 17, Division 1, Chapter 5, Subchapter 4 regulates the use of radioactive material and includes requirements for the registration of sources of radiation and the licensing of radioactive material. This subchapter also contains standards that protect against radiation, including the need for inspections,

¹⁰ State Water Resources Control Board, 2021, Division of Water Quality – Underground Storage Tank Program, https://www.waterboards.ca.gov/water_issues/programs/ust/, accessed January 26, 2021.

¹¹ University of California Berkeley, 2018, Non-Ionizing Radiation Safety Manual, <https://ehs.berkeley.edu/laser-safety/non-ionizing-radiation-safety-manual/#introduction>, accessed August 28, 2020.

investigations, maintaining proper records and notifications, and the proper use of X-ray machines and radioactive materials. Standards for the transportation of radioactive materials and the responsibilities of local health departments are also covered.

California Occupational Safety and Health Administration Bloodborne Pathogens Standards

The Cal/OSHA Bloodborne Pathogen Standard (CCR Title 8 Section 5193) requires all laboratories and departments that work with human blood, body fluids, or tissue to develop and implement a written exposure control plan to reduce or eliminate risk of exposure to human bloodborne pathogens during research and teaching.¹² The purpose of the Bloodborne Pathogen Standard is to reduce occupational exposure to hepatitis B, HIV, hepatitis C, and other potentially infectious bloodborne pathogens that employees may encounter in their workplace.¹³

California Medical Waste Management Act

In California, medical waste is handled according to the Medical Waste Management Act. Medical waste includes any biohazardous, pathology, pharmaceutical, or trace chemotherapy waste that is not regulated by the federal RCRA; sharps and trace chemotherapy wastes generated in the diagnosis, treatment, immunization, or care of humans or animals; waste generated in research pertaining to the production or testing of microbiologicals; and waste generated in research using human or animal pathogens.¹⁴

California Building Code

The State of California provides a minimum standard for building design through the California Building Code (CBC), which is found in 24 CCR Part 2. The CBC is updated every three years. It is generally adopted on a jurisdiction-by-jurisdiction basis and may be subject to further modification based on local conditions. Commercial and residential buildings are plan checked by local city and county building officials for compliance with the typical fire safety requirements of the CBC, including the installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors and building materials; and the clearance of debris and vegetation near occupied structures in wildfire hazard areas.

California Fire Code

The California Fire Code (CFC) incorporates, by adoption, the International Fire Code of the International Code Council, with California amendments. This is the official fire code for the state and all political subdivisions, located in 24 CCR Part 9. The CFC is revised and published approximately every three years by the California Building Standards Commission.

¹² University of California, Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, 2005, State Clearinghouse Number 2003082131.

¹³ University of California Berkeley, Exposure Control Plan, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/biosafety/ExposureControlPlan.pdf>, accessed August 27, 2020.

¹⁴ University of California Santa Barbara, 2018, Biological Safety Medical Waste Management, <https://www.ehs.ucsb.edu/biosafety/medical-waste-management>, accessed August 27, 2020.

California Health and Safety Code

California Health and Safety Code Chapter 6.95 and 19 CCR Section 2729 set out the minimum requirements for business emergency plans and chemical inventory reporting. These regulations require businesses to provide emergency response plans and procedures, training program information, and a hazardous material chemical inventory disclosing hazardous materials stored, used, or handled on-site. A business that uses hazardous materials or a mixture containing hazardous materials must establish and implement a management plan if the hazardous material is handled in certain quantities.

Senate Bill 1889, Accidental Release Prevention Law

On January 31, 1994, the USEPA promulgated a final rule under provisions of the Clean Air Act for the prevention of accidental releases of hazardous substances. The rule established a list of chemicals and threshold quantities that identify facilities subject to subsequent accident prevention regulations. In October 1996 California passed Senate Bill 1889, now incorporated as Health and Safety Code Sections 25531 to 25534.3. This bill established the merging of the federal and State programs for the prevention of accidental releases of regulated toxic and flammable substances. Cal OES has adopted regulations to eliminate the need for two separate and distinct risk management programs. The incorporation of the federal and State requirements has been designated as the California Accidental Release Prevention Program, or CalARP.

California Code of Regulations: Worker Safety Standards: Asbestos and Lead

CCR, Title 8, Section 1529 and 1532.1 sets forth worker safety standards for asbestos and lead exposure for employees conducting demolition, construction, and renovation work, including painting and decorating.

Public Resources Code Section 21151.4

Section 21151.4 of the Public Resources Code (PRC) states:

An environmental impact report shall not be certified or a negative declaration shall not be approved for any project involving the construction or alteration of a facility within one-fourth of a mile of a school that might reasonably be anticipated to emit hazardous air emissions, or that would handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code, that may pose a health or safety hazard to persons who would attend or would be employed at the school, unless both of the following occur:

1. The lead agency preparing the environmental impact report or negative declaration has consulted with the school district having jurisdiction regarding the potential impact of the project on the school.

2. The school district has been given written notification of the project not less than 30 days prior to the proposed certification of the environmental impact report or approval of the negative declaration.¹⁵

Regional Regulations

San Francisco Bay Regional Water Quality Control Board

The Porter-Cologne Water Quality Act established the SWRCB and divided the state into nine regional basins, each under the jurisdiction of a Regional Water Quality Control Board (RWQCB). The San Francisco Bay RWQCB, Region 2, regulates water quality in the city of Berkeley and greater EIR Study Area. The San Francisco Bay RWQCB has the authority to require groundwater investigations and/or remedial action if the quality of groundwater or surface waters of the state are threatened.

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) has primary responsibility for control of air pollution from sources other than motor vehicles and consumer products. The latter are typically the responsibility of the California Air Resources Board and the CalEPA, respectively. The BAAQMD is responsible for preparation of attainment plans for nonattainment criteria pollutants, control of stationary air pollutant sources, and issuance of permits for activities, including demolition and renovation activities affecting asbestos containing materials (District Regulation 11, Rule 2) and lead (District Regulation 11, Rule 1).

East Bay Municipal Utility District Wastewater Discharge Permit

EBMUD requires UC Berkeley to submit a Wastewater Discharge Permit application every five years that describes waste use, process description, wastewater origins, characteristics, and volumes. The permit issued by EBMUD allows UC Berkeley to discharge approximately 1,000,000 gallons of wastewater daily to the community sewer system. The wastewater is treated at the EBMUD Wastewater Treatment Plant in Oakland.

University of California

UC Berkeley Safety and Environmental Programs

The UC Berkeley Office of Environment, Health & Safety (EH&S) has primary responsibility for creating and maintaining safety programs to provide safe conditions the environment and the UC Berkeley community and the public in compliance with related standards and regulations. Mandatory compliance measures and programs implemented by UC Berkeley include:

¹⁵ California Department of Education, July 17, 2019, Reference to Public Resources Code, <https://www.cde.ca.gov/ls/fa/sf/prccoderef.asp>, accessed August 31, 2020.

- **Safe Handling and Storage of Hazardous Materials:** UC Berkeley maintains HMBPs for various locations on campus per federal, State, and the City of Berkeley's Toxics Management Division requirements. UC Berkeley also maintains Hazardous Materials Storage Permits, and Hazardous Waste Generator Permits.¹⁶ The EH&S booklets, "Safe Storage of Hazardous Chemicals" and "Guidelines for Explosive and Potentially Explosive Chemicals: Safe Storage and Handling;" the fact sheet, Flammable & Combustible Liquids Storage In Campus Laboratories; and other publications available on the EH&S website provide details on safe hazardous materials storage and handling practices. Furthermore, material safety data sheets guidance should be followed if the work involves hazardous materials.
- **Transportation of Hazardous Waste and Materials:** Safe transportation procedures are outlined in the EH&S fact sheet, Transporting Chemicals Safely on Campus.¹⁷ Specific procedures for safe chemical transportation include the use of secondary containment and other acceptable practices. A separate EH&S publication, Laboratory and Shop Deactivation and Move Manual, sets forth procedures for moving an entire laboratory.¹⁸ Furthermore, all materials regulated in transportation must be shipped by an individual trained and certified by UC Berkeley to meet the requirements of the DOT Hazardous Materials Requirements and the IATA DGR on identifying, marking, labeling, documenting, and offering the material to a registered transport carrier.
- **Disposal of Hazardous Waste:** Strict environmental laws govern the disposal of all hazardous wastes. Unwanted hazardous materials may not be discharged into the environment or disposed of in the municipal trash. EH&S picks up hazardous materials for proper disposal after users properly package and label unwanted items. Guidelines for proper packaging and labeling of unwanted hazardous materials are described in the EH&S' detailed guidance on use of the EH&S Hazardous Waste Program.¹⁹
- **Green Labs Program:** This program was created to improve sustainable practices within research and teaching labs at UC Berkeley with the goal to incorporate waste elimination along with actions and procurement strategies for researchers, instructors, and lab spaces. The core initiatives that are part of the Green Labs program Action Plan are managed by the following lead departments:
 - Environment, Health & Safety Office: Engagement, Green Labs Certification, Chemical and Regulated Waste Reduction
 - Supply Chain Management Office: Procurement, Consumables, Packaging, and Equipment
 - Campus Energy Office: Energy and Water Efficiency
 - Cal Zero Waste Office: Municipal Solid Waste Reduction²⁰
- **Hazard Communication Program:** The EH&S Hazard Communication program seeks to help UC Berkeley departments fulfill the requirements of Cal/OSHA Section 5194, also known as the "Employee

¹⁶ University of California Berkeley, 2018, Environmental Permits & Management Plans, <https://ehs.berkeley.edu/management-plans-and-permits>, accessed August 28, 2020.

¹⁷ University of California Berkeley, June 26, 2006, Transporting Chemicals Safely on Campus, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/hazardous-materials/17transportchem.pdf>, accessed August 26, 2020.

¹⁸ University of California Berkeley February 2009, Laboratory and Shop Deactivation and Move Manual, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/workplace-safety/movemanual2009.pdf>, accessed August 26, 2020.

¹⁹ University of California Berkeley, , Instructions on How to Use the Hazardous Waste Program, <https://ehs.berkeley.edu/instructions-how-use-hazardous-waste-program>, accessed January 7, 2021.

²⁰ University of California Berkeley, May 2020, Green Labs Action Plan, https://sustainability.berkeley.edu/sites/default/files/uc_berkeley_green_labs_action_plan_may_2020.pdf, accessed January 26, 2021.

Right-to-Know” law. The law requires employers to provide information on physical and health hazards of the materials employees use or encounter as part of their work. There are five basic components of UC Berkeley’s Hazard Communication standard:

- Adequate labeling of all hazardous substances in the workplace.
 - Providing information such as Safety Data Sheets for each hazardous chemical in the department.
 - Training employees on the chemical hazards of their workplace.
 - Completing chemical hygiene plans signed by employees at each laboratory and research facility using hazardous materials.
 - Completing a “Hazard Communication” form signed by each employee using shops and other production or service areas using hazardous materials.²¹
- **Chemical Inventory Program:** Federal, State, and local regulations require UC Berkeley to inventory the types and quantities of its hazardous materials. The Chemical Inventory Program, coordinated by EH&S, tracks and reports the storage and use of hazardous materials. The inventory assists emergency responders, provides UC Berkeley users with specific hazard and storage information, aids in the sharing of chemicals, and reminds users to dispose of sensitive chemicals before they become unsafe or expensive to dispose of.²²
- **Safe Handling, Storage, and Disposal of Radioactive Material:** UC Berkeley’s Radiation Safety Manual describes the policies and procedures intended to ensure radiation safety on the UC Berkeley campus.²³ The manual also sets out requirements for obtaining radioactive material licenses per federal and State regulations, including documents and training with guidance in the safe storage and labeling of radioactive materials. UC Berkeley’s Radiation Safety Information System is a database with information on radiation use authorizations. This inventory is used to verify compliance with UC Berkeley radioactive materials license requirements.
- **Safe Handling, Storage, and Disposal of Biohazardous Material:** Biological hazardous materials include infectious or toxic microorganisms (including viral vectors), recombinant DNA, potentially infectious human substances, and research animals and their tissues in cases from which transmission of infectious agents or toxins is reasonably anticipated. UC Berkeley’s Biosafety Manual outlines administrative steps necessary to obtain and maintain approval for the use of biological materials in laboratories as well as a reference for good work practices and safe handling of such materials. UC Berkeley’s Exposure Control Plan describes how to eliminate or minimize the exposure of all UC Berkeley personnel to human and nonhuman primate blood or blood products and other potentially infectious materials that might contain bloodborne pathogens in accordance with Cal/OSHA’s Bloodborne Pathogen Standard.²⁴
- **Medical Waste Management Program:** UC Berkeley generates medical waste primarily from research, animal facilities, and health services. As a large quantity generator of medical wastes, UC Berkeley is

²¹ University of California Berkeley, 2018, Hazard Communication, <https://ehs.berkeley.edu/hazard-communication>, accessed August 26, 2020.

²² University of California Berkeley, February 20, 2008, Chemical Inventory, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/workplace-safety/o2cheminv.pdf>, accessed August 26, 2020.

²³ University of California Berkeley, August, 2017, Radiation Safety Manual, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/radiation-safety/RSM2017.pdf>, accessed January 12, 2021.

²⁴ University of California Berkeley, Exposure Control Plan, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/biosafety/ExposureControlPlan.pdf>, accessed August 27, 2020.

obligated to comply with the California Medical Waste Management Act, which requires that departments, units, and laboratories that generate medical waste properly manage that waste.²⁵ UC Berkeley's fact sheet, Needles and Sharps: Safe Handling, Injury Response, and Disposal, details control measures for the proper use of needles and sharps, correct handling procedures, and disposal requirements.²⁶

- **Management of Nonionizing Radiation:** Nonionizing radiation (NIR) sources are present on the UC Berkeley campus either in research applications or in ancillary equipment. It is the policy of UC Berkeley to provide a workplace safe from the known hazards of NIR by ensuring compliance with federal and State safety regulations. The NIR safety program is upgraded as new regulations and standards become available and are detailed in the UC Berkeley Non-Ionizing Radiation Safety Manual.²⁷
- **Toxic Gas Program:** UC Berkeley has a program that specifies minimum requirements for safe storage, use, and handling of toxic gas on campus. EH&S coordinates this program by performing evaluations of toxic gas usage and offering technical advice on the requirements of the program.²⁸
- **Transgenic Material:** Research involving transgenic animals or plants performed at UC Berkeley adhere to the requirements of the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules. Furthermore, UC Berkeley's Recombinant DNA Emergency Spill and Incident Reporting Procedures in a BSL 1 or BSL 2 Laboratory details the procedure that needs to be followed in case of recombinant DNA spills.²⁹
- **Underground Storage Tanks Monitoring and Response Program:** UC Berkeley has an established UST Monitoring and Response Plan per the requirements of the SWRCB, as delegated to the City of Berkeley's Toxics Management Division. Equipment and operations involving underground storage tanks must have operating permits from EH&S.³⁰ The user is responsible for providing relevant information to obtain permits, meeting permit conditions, and any fiscal responsibility. EH&S coordinates UST permit applications on behalf of UC Berkeley.
- **Aboveground Storage Tank Spill Prevention Control, and Countermeasure Program:** In California, owners, and operators of aboveground storage tanks must comply with State and federal regulations pertaining to oil spill prevention and aboveground petroleum storage. UC Berkeley has established spill prevention control, and countermeasure plans (SPCC) for the Campus Park and the Richmond Field

²⁵ University of California, Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, 2005, State Clearinghouse Number 2003082131.

²⁶ University of California Berkeley, May 21, 2020, Needles and Sharps - Safe Handling, Injury Response, and Disposal, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/biosafety/12sharps.pdf>, accessed August 27, 2020.

²⁷ University of California Berkeley, November, 2015, Laser Radiation Safety Manual, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/laser-safety/lasersafetymanual.pdf>, accessed January 12, 2021.

²⁸ University of California Berkeley, March 6, 2020, Toxic Gas Program, <https://ehs.berkeley.edu/sites/default/files/toxicgasprogram2020.pdf>, accessed August 28, 2020.

²⁹ University of California Berkeley, April 20, 2011, Recombinant DNA Emergency Spill and Incident Reporting Procedures in a BSL 1 or BSL 2 Laboratory, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/biosafety/78dnaspill.pdf>, accessed August 28, 2020.

³⁰ University of California Berkeley, 2018, Environmental Permits & Management Plans, <https://ehs.berkeley.edu/management-plans-and-permits>, accessed August 28, 2020.

Station per the requirements of the USEPA and the SWRCB.³¹ The SPCC plans are aimed at identifying possible spill scenarios and developing safeguards against such occurrences from aboveground storage tanks. Regulatory oversight of this program is also delegated to the City of Berkeley Toxics Management Division.

- **Workplace Safety Program:** It is the policy of UC Berkeley to maintain a safe and healthy work environment for each employee (including student and contract employees) and to comply with all applicable occupational health and safety regulations. In August 2017, UC Berkeley established a central safety program called the Workplace Safety Program, which is based on the UC Berkeley Injury and Illness Prevention Program policy. The Workplace Safety Program details the health and safety practices to be followed to prevent work-related injuries and illnesses, along with procedures and resources for implementing guidance for the Injury and Illness Prevention Program.^{32,33}
- **Emergency Operation Plan:** UC Berkeley's EOP provides strategic direction to emergency response activities by outlining common tasks that units will carry out during emergency operations. UC Berkeley's EOP incorporates the components of the Standardized Emergency Management System, as described by California Government Code 8607(a), and the Incident Command System and National Incident Management System, as described in the Department of Homeland Security.³⁴

UC Berkeley Waste Discharge Permit Requirements

As part of the Waste Discharge Permit, EBMUD requires UC Berkeley to maintain the following plans and documents:

- **Wastewater Toxics Management Plan:** This plan incorporates all pollution prevention requirements in the Waste Discharge Permit. The plan includes, but is not limited to, chemicals listed in 40 CFR Part 122. The USEPA has listed these chemicals and elements as priority pollutants because their bio-accumulative and toxic nature have been demonstrated to be harmful to human health and wildlife.³⁵
- **Drain Disposal Restrictions for Chemicals:** The Waste Discharge Permit, in addition to federal and State laws and regulations, prohibits drain disposal of hazardous wastes and limits the allowable wastewater concentration for drain disposal of a number of specific substances. Prohibitions on chemical disposal into drains are detailed in UC Berkeley's Drain Disposal Restrictions for Chemicals.
- **UC Berkeley Slug Control Plan:** The purpose of UC Berkeley's Slug Control Plan is to eliminate or minimize the potential for an accidental discharge of pollutants that could reach the sanitary sewer and cause a violation of UC Berkeley's EBMUD wastewater discharge permit conditions. The slug control plan describes procedures for identifying potential spill sources, implementing preventative measures,

³¹ University of California Berkeley, 2018, Environmental Permits & Management Plans, <https://ehs.berkeley.edu/management-plans-and-permits>, accessed August 28, 2020.

³² University of California Berkeley, 2018, Workplace Safety Program, <https://ehs.berkeley.edu/workplace-safety-program-o>, accessed January 26, 2021.

³³ University of California Berkeley Office of Environment, Health & Safety, April 5, 2018, Workplace Safety Program, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/workplace-safety/WorkplaceSafetyProgram2018.pdf>, accessed January 26, 2021.

³⁴ University of California Berkeley, 2014, Emergency Operation Plan.

³⁵ University of California Berkeley, July, 2019, Wastewater Toxics Management Plan, <https://ehs.berkeley.edu/wastewater-toxics-management-plan>, accessed December 8, 2020.

conducting spill response, and notifying the appropriate authorities in the event of an accidental slug discharge to the sanitary sewer. In addition, the plan presents best management practices for preventing slug discharges to sanitary sewers. The plan applies to all UC Berkeley operations where there is a potential for slug discharges, including research and teaching laboratories, facilities operations, food preparations, construction sites, and hazardous waste accumulation areas. A slug discharge means any discharge of a nonroutine, episodic nature, including, but not limited to:

- A spill or noncustomary discharge of potentially hazardous material
- Hazardous waste discharges
- Discharges reaching the campus storm drain system other than clean rainwater
- Discharges that exceed EBMUD Wastewater Control Ordinance limitations
- Discharges not allowed by UC Berkeley's Drain Disposal Restrictions for Chemicals.³⁶

UC Berkeley Environmental Enforcement Code

The Environmental Enforcement Code was adopted in 2018 for the purpose of enforcing federal, State, and local environmental rules and regulations on all properties owned, operated, or controlled by the UC California Regents and administered by UC Berkeley. The policy requires UC Berkeley to conduct investigations of environmental releases, and where appropriate, obtain technical or monitoring reports from any person suspected of causing an environmental release. The code is enforced by the University of California Police Department, which can issue citations, detain violators, or refer environmental criminal cases to the County District Attorney's Office, as appropriate.

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing UC Berkeley buildings, infrastructure, grounds, and maintenance issues. Key sections of the Design Standards relevant to hazards and hazardous materials include an entire section that dictates the management of hazardous waste and disposal, such as providing personnel trained in hazardous waste handling along with proper containers, labels, storage areas, inspections, and disposal. The standards also include requirements related to dewatering activities.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to hazards and hazardous materials as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are

³⁶ University of California Berkeley, July 2020, Slug Control Plan, <https://ehs.berkeley.edu/slug-control-plan>, accessed August 31, 2020.

identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.8.3, Impact Discussion.

Local Regulations

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the City of Berkeley related to hazards and hazardous materials that UC Berkeley may consider or in the case of some hazardous materials programs described below is subject to, when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

City of Berkeley Underground Storage Tank Permit Requirement

The City of Berkeley's Toxics Management Division, as a delegated CUPA by the State, regulates underground storage tanks (UST) that contain hazardous substances in Berkeley. USTs are used to store large quantities of hazardous materials such as gasoline, diesel, and biodiesel. The City of Berkeley's Toxics Management Division oversees regulatory compliance and construction permits for USTs per its Underground Storage Tank Permit Requirements manual.³⁷

City of Berkeley 2016 Emergency Operations Plan

The City of Berkeley's 2016 Emergency Operations Plan (EOP) establishes the authorities, structures, and responsibilities of the policy level, departments, and the city's emergency operations center (EOC). It describes the City's coordination with County, regional, State, and federal entities as well as external Berkeley partners.³⁸

City of Berkeley Municipal Code

Chapter 12.84, Transportation of Radioactive Materials, of the City of Berkeley's municipal code supplements present federal and State regulations with procedures to protect against and deal with potential accidents that may occur during the transportation and shipment of radioactive materials. The City requires a certificate of emergency transport, issued by the fire chief or a designated representative,

³⁷ City of Berkeley, November 2014, Underground Storage Tank Permit Requirement , https://www.cityofberkeley.info/uploadedFiles/Online_Service_Center/Level_3_-_General/Storage%20Tank%20Requirements%202014-2.pdf, accessed August 26, 2020.

³⁸ City of Berkeley, 2016 Emergency Operations Plan, https://www.cityofberkeley.info/uploadedFiles/Finance/Level_3_-_General/Attachment%20J-%20City%20of%20Berkeley%202016%20EOP%20-%20Base%20Plan%20FINAL%20DRAFT.PDF, accessed September 1, 2020.

for the shipping or transportation of radioactive materials into, through, or over the City of Berkeley by any mode of transportation. The certificate specifies conditions deemed reasonably necessary to protect the public health, safety, and welfare of the community.³⁹

Chapter 15.12, Hazardous Materials and Waste Management, governs the use, handling, storage and disposal of hazardous materials and wastes in Berkeley including exposure to such substances as a result of fire, spills, industrial accidents, or other releases or emissions. Facilities are required to:

1. Report all hazardous materials and hazardous wastes if at any time during a year the combined total exceeds 500 pounds or more of all solid hazardous materials and wastes; 55 gallons or more of all liquid hazardous materials and wastes; or 200 cubic feet or more at standard temperature and pressure of all gaseous hazardous materials. Materials in consumer packaging located in a retail area for direct sale to the public need not be included (BMC 15.12.050(A)).
2. Report any quantity of hazardous waste (BMC 15.12.050(C)(4)).
3. Report any quantity of a material that is or contains a material subject to regulation by the Nuclear Regulatory Commission in Title 10 of the Code of Federal Regulations, including any by-product, licensed, source, or special material (BMC 15.12.050(C)(2)).
4. Report all manufactured nanoparticles, defined as a particle with one axis less than 100 nanometers in length (BMC 15.12.050(C)(7)).
5. Report any quantity of an etiologic agent, as defined in subsection D of Section 15.08.060 of the Berkeley Municipal Code Title 15.

5.8.1.2 EXISTING CONDITIONS

LRDP Update

Hazardous Materials Management

The Environmental, Health and Safety Policy Committee, as delegated by UC Berkeley's chancellor, sets environmental, health, and safety policies. In accordance with these policies, students, faculty, staff, administrators, visitors, and guests have responsibilities for complying, implementing, communicating, and/or ensuring adherence to environmental, health, and safety regulations, principles, and practices.

EH&S develops and oversees programs to be implemented by UC Berkeley to meet legal requirements and environmental, health, and safety policies adopted by UC Berkeley. EH&S also provides technical expertise, consulting assistance, permit management, and other services to ensure compliance with legal requirements. Furthermore, EH&S is responsible for picking up and processing unwanted hazardous material and waste and coordinating the proper disposal of waste and redistribution of reusable material. EH&S also communicates with regulatory agencies in the environmental, health, and safety arena on behalf of UC Berkeley. Responsibilities may include informational and corrective action meetings, negotiations, UC

³⁹ City of Berkeley, December 1, 2020, Municipal Code, Chapter 12.84, <https://www.codepublishing.com/CA/Berkeley/?Berkeley12/Berkeley12.html>, accessed January 26, 2021.

Berkeley input on pending legislation, and written communications. Additionally, EH&S provides direct services to UC Berkeley, including:

- Filing HMBPs and ensuring review by and distribution to other potentially affected agencies, including the Berkeley Fire Department (BFD). UC Berkeley holds a total of 16 properties in urban areas that are required by law to develop an HMBP.
- Investigating accidents on the campus.
- Providing information about asbestos, performing asbestos inspections and evaluations, and auditing the work of asbestos abatement contractors.
- Assisting the Committee for Laboratory and Environmental Biosafety (CLEB) to issue Biohazard Use Authorizations (BUA) responding to concerns and allegations about improper practices involving biohazardous materials, inspecting BUA holders annually, and reviewing departmental manuals as requested for handling biohazardous materials.
- Assisting in the completion of environmental permits pertaining to air and water quality protection.
- Inspecting campus buildings to identify and eliminate fire hazards, such as improper storage of flammable material, electrical fire hazards, and blocked hallways or exits.
- Testing fume hoods approximately twice a year and biohoods annually to ensure that adequate airflow is maintained.
- Upon request, aiding in hazardous material spill cleanup, preparing written reports about reportable releases, and notifying appropriate agencies about reportable spills.
- Providing prompt, safe, cost-effective, and legal waste management services to UC Berkeley chemical, radioactive, and medical waste generators. This includes compliance assistance, waste pick-up, hazardous chemical material reuse, transportation, disposal, and tracking.
- As delegated by the California State Fire Marshal, reviewing and approving/denying plans for new construction and renovation and conducting construction inspections to ensure compliance with applicable Fire Code requirements.
- Offering training in the environmental, health, and safety area. Some of these training areas include:
 - Asbestos Awareness
 - Biological Safety Cabinet Use
 - Chemical Inventory Software
 - Fire and Life Safety
 - Fume Hood Use
 - Hazard Communication
 - Hazardous Waste Disposal and Minimization
 - Injury and Illness Prevention
 - Laboratory Safety⁴⁰

⁴⁰ University of California Berkeley, 2018, Responsibility for Environment, Health and Safety, <https://ehs.berkeley.edu/responsibility-environment-health-and-safety>, accessed August 29, 2020.

EH&S manages most hazardous waste at the Hazardous Materials Facility (HMF) in the Campus Park on Frank Schlesinger Way, just east of the Hellman tennis complex. Hazardous waste is collected, labeled, packaged, and transported to various off-campus treatment facilities, depending on the waste type. For locations outside of the Campus Park, EH&S coordinates waste pick-up directly through its licensed hazardous waste vendors.

Contamination in Existing Buildings

Lead paint is present in many UC Berkeley buildings because of their age. Through the combination of large-scale abatement projects and a continuing asbestos maintenance program, all significant asbestos exposure hazards have been eliminated from campus. However, at some locations on campus, asbestos building materials are still in place. In addition, in buildings currently or formerly used as laboratories, building materials, such as floor and wall surfaces, sink traps, and drain piping, can be contaminated by spills, aerosol releases, or historical drain disposal of hazardous materials. PCBs may also be present in fluorescent light ballasts and some building materials.⁴¹

Biohazardous Materials

The CLEB is charged with formulating UC Berkeley policies to ensure the safe conduct of research involving biohazardous agents and materials. These policies, developed in accordance with guidelines of the NIH and the Centers for Disease Control, relate to facility design; containment equipment; safe laboratory practice; and training of students, staff, and faculty working in the facility. All faculty whose research involves working with biohazardous agents in animals and/or the laboratory must hold a valid BUA. BUA requirements apply generally to laboratory research involving organisms with the potential to cause human disease, and to experiments with recombinant DNA, covered by the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules. Before this authorization is issued, the animal and/or laboratory facilities and laboratory practices are reviewed by EH&S and CLEB.

Furthermore, EH&S implements a biosafety program that consists of three specific programs that are designed to ensure that all work involving biohazardous materials is conducted in compliance with federal and State regulations:

- **The BUA Program:** EH&S provides application forms and copies of the regulations to persons who plan to conduct laboratory work with biological materials (including recombinant DNA). EH&S also assists researchers in obtaining BUAs and meeting applicable OSHA requirements.
- **OSHA Bloodborne Pathogens Standards:** EH&S provides compliance assistance, technical information, training, and materials to implement the Cal/OSHA bloodborne pathogen standard at UC Berkeley.
- **Biological Safety Cabinet Program:** EH&S assists users at UC Berkeley in complying with National Sanitation Foundation Standards and Cal/OSHA ventilation requirements for biological safety cabinets and also assists users in the proper use of biological safety cabinets and laminar-flow clean benches.

⁴¹ University of California, Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, 2005, State Clearinghouse Number 2003082131.

Most of the biological research conducted at UC Berkeley involves the use of relatively low-level biohazardous materials. Nearly all biological research at UC Berkeley is conducted at Biosafety Levels 1 or 2.^{42,43}

Hazardous Materials Sites

California Government Code Section 65962.5 requires the Cal/EPA to compile, maintain, and update specified lists of hazardous material release sites. CEQA (California PRC Section 21092.6) requires the lead agency to consult these lists to determine whether the project or any alternatives are identified on any:

- **USEPA National Priorities List.** The National Priorities List includes all sites under the USEPA's Superfund program, which was established to fund cleanup of contaminated sites that pose risks to human health and the environment.
- **USEPA CERCLIS and Archived Sites.** The USEPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) includes a list of 15,000 sites nationally identified as hazardous sites. This would also involve a review for archived sites that have been removed from CERCLIS due to No Further Remedial Action Planned status.
- **USEPA RCRIS (RCRA Info).** The Resource Conservation and Recovery Act Information System (RCRIS or RCRA Info) is a national inventory system about hazardous waste handlers. Generators, transporters, handlers, and disposers of hazardous waste are required to provide information for this database.
- **DTSC Cortese List.** The DTSC maintains the Hazardous Waste and Substances Sites (Cortese) list as a planning document for use by the State and local agencies to comply with the CEQA requirements in providing information about the location of hazardous materials release sites. This list includes the Site Mitigation and Brownfields Reuse Program Database.
- **DTSC HazNet.** The DTSC uses this database to track hazardous waste shipments.
- **SWRCB LUSTIS.** Through the Leaking Underground Storage Tank Information System, the SWRCB maintains an inventory of USTs and leaking USTs (LUST), which tracks unauthorized releases.

The required lists of hazardous material release sites are commonly referred to as the "Cortese List," named after the author of the legislation. Because the statute was enacted more than 20 years ago, some of the provisions refer to agency activities that are no longer conducted and, in some cases, the information required in the Cortese List does not exist. Those requesting a copy of the Cortese List are now referred directly to the appropriate information resources on websites hosted by the boards or departments referenced in the statute, including DTSC's online EnviroStor database and the SWRCB's online GeoTracker database. These two databases include hazardous material release sites, along with other categories of sites or facilities specific to each agency's jurisdiction.

⁴² There are four biosafety levels, with Biosafety Level 1 (BSL-1) being the least stringent and Biosafety Level 4 (BSL-4) being the most stringent. Generally speaking, the BSL-1 is assigned to work with nonpathogenic microorganisms, BSL-2 is recommended for disease agents transmitted by direct contact (percutaneous inoculation, ingestion, or mucous membrane exposure), BSL-3 is recommended for disease agents with a potential for aerosol transmission, and BSL-4 is recommended when total separation between the infectious agent and investigator is critical.

⁴³ University of California, Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, 2005, State Clearinghouse Number 2003082131.

A search of the online databases on August 29, 2020, identified 16 hazardous material sites within and adjacent to the EIR Study Area. Out of the 16 sites were a total of 4 active sites. The complete list of sites is shown in Table 5.8-1, Hazardous Material Sites in and Adjacent to the EIR Study Area. Most listed sites are classified as LUST Sites, which are primarily associated with gasoline and diesel.

Existing Schools

This chapter also evaluates the potential impacts of hazardous materials sites on schools and daycare centers within a quarter mile of the EIR Study Area, including compliance with federal and State regulations regarding hazardous materials sites near schools.

There is one public school within a quarter mile of the EIR Study Area: Berkeley High School located at 1980 Allston Way. Additionally, private schools and daycare centers within a quarter mile of the EIR Study Area include the Montessori Family School adjacent to the north side of the Campus Park at the corner of Scenic Drive and Hearst; Berkeley Arts Magnet School at Milvia and Virginia Streets; Saint John's Childcare Center at 2727 College Avenue; the Cornerstone Children's Center at 2407 Dana Street; the Haste Street Child Development Center at 2339 Haste Street; and the Berkeley Rose Waldorf School at 2515 Hillegass Avenue.

Emergency Operations Management

The UC Berkeley Office of Emergency Management (OEM) works collaboratively to plan and prepare UC Berkeley for emergencies, educate about preparedness, and coordinate response and recovery. OEM administers a comprehensive emergency management and continuity program for UC Berkeley to respond to, recover from, and reduce the effects of risks associated with emergencies of all types and sizes. OEM is a unit of the UC Berkeley Administrative Division and implements UC Berkeley's EOP.

OEM includes the UC Berkeley EOC. UC Berkeley's EOC is responsible for the coordination of information and resources to manage and support an emergency. The UC Berkeley EOC is activated for a variety of emergencies that may affect UC Berkeley, such as an earthquake, wildfire, or large-scale power outage. OEM focuses on building partnerships across UC Berkeley. Depending on the emergency type and size, OEM collaborates with UC Berkeley departments and local authorities. Some of OEM's internal partners include:

- University Health Services (UHS)
- Disability Access & Compliance (DAC)
- Facilities Services
- Environment, Health & Safety (EH&S)
- Fire Prevention (Campus Fire Marshal)
- Communications & Public Affairs
- Student Affairs

TABLE 5.8-1 HAZARDOUS MATERIAL SITES IN AND ADJACENT TO THE EIR STUDY AREA

Map Id	Site Name	Address	Site Type	Potential Contaminants	Cleanup Status
EnviroStor Cleanup Program Sites					
1.	Lawrence Berkeley Laboratory	1 Cyclotron Road/MS75B-101	Corrective Action	Methane Petroleum Polychlorinated Biphenyls (PCBS) Volatile Organics	Active as of 1/1/2008
2.	UC Berkeley Sutarja Dai Hall	317 University Hall, MC 1150	Tiered Permit	Corrosive liquids	Authorization Granted
GeoTracker Sites					
3.	Lawrence Berkeley Laboratory Facility-wide	1 Cyclotron Road	Cleanup Program Site	Solvents	Open – Remediation as of 1/1/2010
4.	Lawrence Berkeley Laboratory Building 76	1 Cyclotron Road	Cleanup Program Site	Diesel	Closed
5.	Lawrence Berkeley Laboratory Building 69	1 Cyclotron Road	Cleanup Program Site	Waste Oil/ Motor/ Hydraulic/ Lubricating	Closed
6.	Lawrence Berkeley Laboratory Building 7E	1 Cyclotron Road	Cleanup Program Site	Diesel	Open – Remediation as of 6/8/2010
7.	Lawrence Berkeley Laboratory Building 74	1 Cyclotron Road	Cleanup Program Site	Waste Oil/ Motor/ Hydraulic/ Lubricating	Open – Remediation as of 6/8/2010
8.	UC Berkeley Physical Plant	2000 Carleton Street	LUST Cleanup Site	Diesel Gasoline	Closed
9.	UC Berkeley Corp Yard	2000 Milvia Street	LUST Cleanup Site	Gasoline	Closed
10.	UC Berkeley Main Campus	Jefferson and Addison	LUST Cleanup Site	Diesel	Closed
11.	UC Berkeley Hearst Mining Building	Hearst Street	LUST Cleanup Site	Diesel	Closed
12.	UC Berkeley	1750 Arch Street	LUST Cleanup Site	Heating Oil Fuel Oil	Closed
13.	UC Berkeley Site Garage (Central Garage)	1952 Oxford Street	LUST Cleanup Site	Diesel Gasoline	Closed
14.	UC Berkeley Anna Head Housing Project	2536 Channing Way	LUST Cleanup Site	Diesel	Closed
15.	UC Berkeley	2515 Channing Way	LUST Cleanup Site	Gasoline	Closed
16.	UC Berkeley Dining Facility	2401 Bowditch Street	LUST Cleanup Site	Diesel Gasoline	Closed

Source: Department of Toxic Substance Control (DTSC) EnviroStor 2020 and State Water Resources Control Board (SWRCB) GeoTracker 2020.

OEM also partners with these external agencies:

- City of Berkeley Office of Emergency Services
- Lawrence Berkeley National Laboratory (LBNL) Emergency Management
- Alameda County Office of Emergency Services⁴⁴

Furthermore, the UC Berkeley EH&S Designated Urgent Response Team (DURT), staffed by health and safety professionals and hazardous materials specialists and technicians, responds to most minor hazardous materials incidents reported at UC Berkeley. Currently, the DURT can generally respond to an incident within 15 minutes. In the infrequent cases when outside assistance is required, such as a life-threatening hazardous materials situation, the DURT or other UC Berkeley staff or students may request emergency assistance from the BFD by dialing 911. The Alameda County Fire Department (ACFD) assists BFD when necessary. EH&S can also obtain support from its list of emergency response contractors.⁴⁵

Additionally, the BFD's OES coordinates a suite of programs to build disaster resilience in the larger Berkeley community. These programs support personal preparedness, community connections, and government efforts that help Berkeley respond to and recover from earthquakes, fires, or other disasters. The OES also reviews, revises, and implements the city's EOP.

Housing Project #1

Housing Project #1 is located on a 0.92-acre site bounded by Berkeley Way on the north, Oxford Street on the east, University Avenue on the south, and Walnut Street on the west (see Figure 3-5, Housing Project #1 Site Aerial). The site is currently occupied by residential apartments, the UC Berkeley shuttle garage, and commercial rental space including a former food cart and car rental agency. The UC Berkeley garage is a recognized historic building. Buildings currently located on the site were built between 1904 and 1950.

Surrounding uses include mixed-use buildings with residential apartments and a restaurant and UC Berkeley's Energy Biosciences Building to the north; the Li Ka Shing Center on the Campus Park to the east; University Hall to the south; and residential mixed-use development (currently under construction) to the west. The project site is in the City Environs Properties, and the surrounding properties are under the jurisdiction of the City of Berkeley.

⁴⁴ University of California Berkeley, 2020, Office of Emergency Management, <https://oem.berkeley.edu/>, accessed August 29, 2020.

⁴⁵ University of California Berkeley, February 2019, Supplemental Draft EIR, Upper Hearst Development for the Goldman School of Public Policy and Minor Amendment to the 2020 Long Range Development Plan, <https://capitalstrategies.berkeley.edu/sites/default/files/draft-supplemental-eir-2020lrdp.pdf>, accessed January 26, 2021.

Hazardous Materials Sites

A search conducted on the EnviroStor database on August 29, 2020, identified no DTSC-listed sites on or within 500 feet of the Housing Project #1 site.⁴⁶ However, the UC Berkley Site Garage (site 13 in Table 5.8-1, Hazardous Material Sites in and Adjacent to the EIR Study Area) is on the Housing Project #1 site. Three other sites listed on the SWRCB's database are within 500 feet of the site. These sites include the Chevron gas station at 2199 Berkeley Way, the California DHS Laboratory Facility at 2151 Berkeley Way, and Avis Rent a Car at 1990 Oxford Street. All four cases have been closed with the SWRCB and do not pose any significant risk to the subject property.⁴⁷

Furthermore, in January 2019 a Phase I Environmental Site Assessment (ESA) was conducted for the proposed Housing Project #1. The Phase I ESA includes records from the City of Berkeley's Toxics Management Division which identify that the gas station at 1952 Oxford Street, on the UC Berkeley Site Garage, and the gas station at 1990 Oxford Street were considered one case. Petroleum hydrocarbon contamination was noted during the removal of both stations in 1988. Previous investigations had determined that petroleum contamination was still present in the subsurface, which constitutes a historical recognized environmental condition (HREC). The case received review by the City of Berkeley's Toxic Management Division in 2004 and full regulatory closure in January 2005 by the RWQCB. The closure letter included a notice in the City of Berkeley's building permit system to indicate that residual contamination is present at 1952 and 1990 Oxford Street, and that the Toxics Management Division needs to review building permits prior to construction.⁴⁸ Additionally, The Phase I ESA found no evidence that nearby historical fueling stations have impacted the site and determined that several hydraulic hoist rams at the site should be considered a recognized environmental condition (REC). None of the hydraulic hoists are being used and do not appear to be in working condition.⁴⁹

An environmental screen of the apartment building at 1921 Walnut Street was conducted on April 24, 2020, and no hazardous material related issues were found. It was reported that linoleum sheet flooring in the apartments may be asbestos-containing material but is considered nonfriable and poses no problems unless disturbed. Due to the age of the building, it is likely that lead-based paint is present on both the exterior wooden siding and interior high-gloss surfaces. There were no environmental regulatory agency records of any hazmat-related releases at the subject property. No significant common household hazardous material was observed on-site.⁵⁰ A Phase I Preliminary ESA for the car rental agency at 2161 University Avenue was prepared on August 11, 2005. The ESA did not identify any significant on-site

⁴⁶ Department of Toxic Substances Control, EnviroStor, <https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=1990+Oxford+St%2C+Berkeley%2C+CA+94704>, accessed August 29, 2020.

⁴⁷ State Water Resources Control Board, GeoTracker, <https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=1990+Oxford+St%2C+Berkeley%2C+CA+94704>, accessed August 29, 2020.

⁴⁸ PII Environmental, Inc, January 21, 2019. Phase I Environmental Site Assessment (ESA) Report Gateway Project, 5-Parcels, Berkeley, California.

⁴⁹ PII Environmental, Inc, January 21, 2019. Phase I Environmental Site Assessment (ESA) Report Gateway Project, 5-Parcels, Berkeley, California.

⁵⁰ Bob Charbonneau, April 24, 2020, Environmental Transaction Screen 1921 Walnut Street, Berkeley.

contamination at the subject property at the time. The property was undeveloped prior to construction of the current building as a food retail store in 1939 and continued as that use until 1962, when the building operated as a paint store. No paints have been manufactured on-site, only mixing and blending of paints. At the time of the ESA, vinyl floor tiles throughout the building likely contained asbestos. However, the tiles are considered nonfriable unless disturbed, so posed no significant risk to the building or occupants at that time.⁵¹

Existing Schools

The Montessori Family School is the only school within a quarter mile radius of the Housing Project #1 site.

Housing Project #2

The Housing Project #2 project site is in the City Environs Properties on the site currently known as People's Park. The project site is three blocks south (0.2 miles) of the Campus Park at 2556 Haste Street and is bounded by Haste Street to the north, Bowditch Street to the east, Dwight Way to the south, and retail commercial buildings that front Telegraph Avenue to the west. The site is a rectangular, 2.8-acre site in a highly urbanized area. Current uses on-site include demonstration gardens, including organic community gardening beds and landscaping with California native plants; lawn space; a paved basketball court; a picnic area; a stage; and public restrooms.

Surrounding uses are made up of mixed-use, commercial, residential, and institutional land uses, including a number of historic buildings. UC Berkeley student housing and the Anna Head Alumnae Hall are to the north; the historic First Church of Christ Scientist and the Vedanta Society are to the east; Julia Morgan's Baptist Seminary and neighborhood homes are to the south; and commercial uses, including a variety of restaurants, cafes, and retail that front Telegraph Avenue, are to the west.

Hazardous Materials Sites

A search conducted on the EnviroStor and GeoTracker databases on August 29, 2020, identified one DTSC cleanup site 300 feet to the southwest of the Housing Project #2 site. A preliminary site investigation of the former Cal Cleaners site, conducted in 2008, indicated a release of perchloroethylene to soil and groundwater. DTSC referred the site to the City of Berkeley's Toxic Management Division for oversight and approval of on-site corrective measures.⁵²

Based on a review of historical information, as presented in the Phase I ESA⁵³ conducted for the site (see Appendix I, Hazardous Materials Data, of this Draft EIR), the project site appears to have had various

⁵¹ Bob Charbonneau, August 11, 2005, Preliminary Site Assessment Due Diligence Report for the Acquisition of Campus-Related Property.

⁵² Department of Toxic Substances Control, EnviroStor, <https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=1990+Oxford+St%2C+Berkeley%2C+CA+94704>, accessed August 29, 2020.

⁵³ PlaceWorks, 2020, Phase I Environmental Site Assessment, People's Park for University of California, Berkeley, September.

residential structures since at least 1895 until around 1968, when the parcel became an open space area colloquially known as People's Park. The Phase I ESA found no RECs,⁵⁴ HRECs,⁵⁵ or controlled RECs (CREC)⁵⁶ on the subject site. Based on the age of the former building, it is possible that asbestos-containing materials (ACM) and lead-based paint (LBP) may have been present in the building materials at the site. The Phase I ESA for the site does not recommend any further assessment.

Existing Schools

The Cornerstone Children's Center and the Haste Street Child Development Center are within a quarter-mile radius of the Housing Project #2 site.

5.8.2 STANDARDS OF SIGNIFICANCE

Based on the preliminary analysis in the Notice of Preparation (see Appendix A, Notice of Preparation and Scoping Comments, of this Draft EIR), it was determined that development of the proposed project would not result in significant environmental impacts related to an airport land use plan or from proximity to a public airport or public use airport, resulting in safety hazards for people living or working in the project area, because the proposed project is not within an airport land use plan area or within two miles of an airport. Therefore, this standard is not discussed further in this EIR. Additionally, impacts related to exposing people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires are fully discussed in Chapter 5.18, Wildfire, of this Draft EIR. Therefore, this standard is not discussed in this chapter.

The proposed project would result in a significant hazards and hazardous material impact if it would:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

⁵⁴ The ASTM E 1527-13 Standard defines an REC in part as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment."

⁵⁵ The ASTM E 1527-13 Standard defines an HREC as "a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)."

⁵⁶ The ASTM Standard defines CRECs as "a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)."

4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
5. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
6. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.8.3 IMPACT DISCUSSION

HAZ-1	The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
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LRDP Update

As discussed in Chapter 3, Project Description, of this Draft EIR, potential future development and redevelopment under the proposed project would be in the Campus Park, the Clark Kerr Campus, the Hill Campus West, the Hill Campus East, and in the City Environs Properties. Such development could occur on sites with known hazardous materials and/or potentially hazardous building materials (e.g., ACMs, LBP) that could be encountered during demolition of existing structures to accommodate new development. These hazardous materials would require cleanup prior to any development; thus, the transport of hazardous materials could occur during future remediation and construction activities.

Furthermore, development under the proposed LRDP Update could increase the amount of laboratory and other research facility space at UC Berkeley, including at the Donner Laboratory. Concurrent with a potential increase in laboratory and other research facility space would be a potential increase in the use of hazardous materials and chemicals, biohazardous materials, radioactive materials, transgenic material, and production of wastes associated with laboratory research activities.

Furthermore, UC Berkeley faculty, staff, and students use many materials, some of which are considered hazardous, for additional activities outside of laboratories. Such hazardous materials include chemical reagents, solvents, fuels, paints, cleansers, and pesticides that are used in activities such as building and grounds maintenance, vehicle maintenance, and fine arts.

Hazardous Demolition and Construction Waste

Due to the age of the UC Berkeley campus, LBP, ACMs, polychlorinated biphenyls (PCBs), and mercury are present in many buildings. In addition, in buildings currently or formerly used as laboratories, building materials, such as floor and wall surfaces, sink traps, and drain piping, can be contaminated by spills, aerosol releases, or drain disposal of radioactive or chemical hazardous materials. The use of radioactive material in UC Berkeley buildings for many decades has created the potential for radioactive material contamination in certain UC Berkeley buildings due to legacy use. PCBs may also be present in fluorescent light ballasts and some building materials. If proper procedures are not followed, workers can be exposed through inhalation

or ingestion of lead dust, asbestos particles, PCBs, mercury vapor, or other contaminants when building materials are disturbed or made friable by drilling, sanding, or other destructive processes. Such activities could also release contaminants into the natural environment.

Several regulations and guidelines pertain to abatement of and protection from exposure to ACMs and LBP, including Construction Safety Orders 1529, CCR, Title 8, Section 1532.1, and the CFR Title 40, Part 61, Subpart M and Title 29, Section 1926.62. In California, ACM and LBP abatement must be performed and monitored by contractors with appropriate certification from the California Department of Health Services. Asbestos is also regulated as a hazardous air pollutant under the Clean Air Act and a potential worker safety hazard under the authority of Cal/OSHA. Furthermore, BAAQMD's District Regulation 11, Rule 2, and District Regulation 11, Rule 1 govern exposure to ACM and LBP emissions. The removal of PCBs and mercury-containing light ballast would be completed in accordance with applicable regulations pursuant to CFR, Title 40, Part 761 and 273 by workers with the HAZWOPER training, as outlined in CFR, Title 29 Section 1910.120 and CCR, Title 8, Section 5192. Throughout the proposed LRDP Update planning horizon, UC Berkeley would continue to perform surveys for hazardous building materials, as described in CBP HAZ-4, and comply with laws and regulations governing the handling of such materials. Thus, impacts would be *less than significant*.

Additionally, potentially hazardous materials used during construction include substances such as paints, sealants, solvents, adhesives, cleaners, and diesel fuel. There is potential for these materials to spill or to create hazardous conditions. However, the materials used would not be in such quantities or stored in such a manner as to pose a significant safety hazard. These activities will also be short term or one time in nature. To prevent hazardous conditions, existing UC Berkeley, State, and federal laws, such as those listed under Section 5.8.1.1, Regulatory Framework, and CBP HAZ-1 would be enforced at the construction sites. Cal/OSHA has regulations concerning the use of hazardous materials, including requirements for safety training, exposure warnings, availability of safety equipment, and preparation of emergency action/prevention plans. Therefore, impacts would be *less than significant*.

Nonradioactive Hazardous Materials

The chemicals that would be used in new laboratories and support space developed under the proposed LRDP Update would be similar to those currently used at UC Berkeley. The level and the nature of the hazards posed by these chemicals and wastes vary widely and are unique to the individual materials, although they often can be grouped by chemical types. Substances can possess one or more common hazard characteristics, such as corrosivity (acids and bases), flammability (solvents such as acetone), toxicity (cyanides, mercuric chloride), and reactivity. Some nonradioactive chemicals have the potential for causing cancer or acute and chronic illnesses, and some substances may present little hazard.

Because most handling of hazardous materials at UC Berkeley takes place indoors, potential pathways for exposure to nonradioactive hazardous chemicals under routine conditions include direct contact or injection during research or through accidental spills or inhalation. Despite the increase in the use of hazardous chemicals at UC Berkeley under the proposed LRDP Update, the risk to the public or the environment would be less than significant, for the reasons discussed below.

Worker and Student Exposure

Workers and students might be exposed to hazardous chemicals through inhalation, skin absorption (contact), ingestion, and injection (cuts). To address this potential impact, laboratories and other facilities constructed under the proposed LRDP Update would continue to comply with all applicable requirements of CCR, Title 8, Section 5191 and UC Berkeley standards per CBP HAZ-1. Fume hoods and other engineering controls would be required to meet Cal/OSHA requirements, and fume hood ventilation rates would continue to be checked annually by EH&S. To prevent exposure through skin contact, UC Berkeley policies and procedures require that protective clothing, such as laboratory coats, gloves, and safety glasses, be worn while handling hazardous materials and wastes. Proper washing after handling chemicals is also required. Continued implementation of these UC Berkeley policies and procedures and continued compliance with existing laws and regulations would minimize the risk to workers and students from exposure to nonradioactive hazardous chemicals, and the impact would be *less than significant*.

Public Exposure

The potential for exposure of the public, including nearby homes and schools, to hazardous materials used at UC Berkeley under routine conditions would be limited, because most hazardous materials use and storage on campus takes place indoors. The most probable potential pathway for public exposure would be air emissions from accidental releases either on campus or during transportation and routine operations. Exposure to air emissions from routine operations are analyzed in Chapter 5.2, Air Quality. The potential for public exposure under upset or accident conditions, both from handling of hazardous materials on campus and during transportation, is discussed in impact discussion HAZ-2 under “LRDP Update.”

Hazardous chemical use under routine conditions could result in impacts to the environment if hazardous materials were improperly disposed of (for example, in the sanitary sewer). Hazardous chemical releases to the environment could also occur if the chemicals are not adequately contained, as in the case of leaking storage tanks, which can contaminate soil and groundwater. Disposal of chemicals into the sanitary sewer is regulated by federal, State, and local laws and regulations. UC Berkeley is subject to requirements specified in various Special Wastewater Discharge Permits issued to the UC by EBMUD.⁵⁷ Federal and California clean water laws permit laboratories to drain dispose of some chemicals in small quantities that do not pose a hazard to human health or the environment, as described in UC Berkeley’s Drain Disposal Restrictions for Chemicals. Continued compliance with federal, State, and local regulations governing the storage of hazardous materials; City of Berkeley Toxic Management Division and EH&S inspections of UC Berkeley laboratories and support facilities using hazardous materials; the UC Berkeley’s aboveground storage tank spill prevention control program and underground storage tanks monitoring and response program; underground storage tanks permits; and implementation of SPCCs all minimize the risk that increased hazardous materials use at UC Berkeley under routine conditions would result in releases to the environment. The impact of hazardous chemical use on the public would be *less than significant*.

⁵⁷ University of California Berkeley, 2018, Special Wastewater Discharge Permits, <https://ehs.berkeley.edu/special-wastewater-discharge-permits>, accessed August 29, 2020.

Nonradioactive Hazardous Waste

Development under the proposed LRDP Update would continue to follow regulations that limit the potential impacts from hazardous wastes such as the RCRA, the Hazardous Substance Account (Health and Safety Code Chapter 6.5, Section 25100), and the Hazardous Waste Control Law (Health and Safety Code Chapter 6.8, Section 25300). In addition, development would continue to implement the requirements specified in various Special Wastewater Discharge Permits issued by EBMUD to prevent inadvertent releases of hazardous materials to the sanitary sewer. Furthermore, UC Berkeley has an established program to minimize the disposal of hazardous materials that are potentially still usable. “Chemicals,” UC Berkeley’s online chemical inventory database, allows sharing of chemicals among UC Berkeley lab users. The College of Chemistry also collects unwanted chemicals from laboratories in the college and makes them available to its researchers. The College of Chemistry’s Chemical ReUse Program and its associated storage facility accepts donated and surplus chemicals, generating a community pool of reagents that department affiliates can access at no cost. In the event of lab closeouts or chemical cleanout, EH&S coordinates with the Chemical ReUse Program add chemicals to the community inventory for reuse by other groups. UC Berkeley also implements the Green Labs program, which aims to increase the use of greener chemical alternatives, promote the reuse of chemicals, and reduce chemical and regulated waste from laboratory and other research facilities.

The UC Berkeley HMF, where UC Berkeley hazardous waste is held temporarily before it is transported to licensed hazardous waste treatment facilities for off-site disposal, is currently operating at approximately 40 percent of capacity and would be able to handle any increase in hazardous waste associated with the proposed project.⁵⁸ Therefore, impacts would be *less than significant*.

Radioactive Materials and Waste

Radioactive materials are useful in research and continue to be used at UC Berkeley. The increase in laboratory and other research facility space under the proposed LRDP Update may result in an increase in radioactive material use depending on the types and quantities of research using radioactive material. The use of radioactive materials and radiation producing machines would be governed by the regulations and requirements issued by the California Department of Public Health’s RHB and UC Berkeley would continue to implement the requirements expressed in its Broad-Scope Radioactive Materials License issued by the RHB. As noted in CBP HAZ-1, radioactive material and waste would also be handled in accordance with UC Berkeley’s Radiation Safety Manual and development pursuant to the proposed LRDP update would implement the existing UC Berkeley Radiation Safety Program. This program is intended to protect personnel from unnecessary radiation exposure, prevent contamination of natural resources, and meet the state and federal regulations governing the possession, use, and disposal of radioisotopes and radiation producing sources.⁵⁹ Future development would also implement UC Berkeley’s radioactive waste minimization program. UC Berkeley has established a three-part program intended to minimize the

⁵⁸ Greg Haet, Environmental Project Manager at UC Berkeley, Email correspondence, December 4, 2020.

⁵⁹ University of California Berkeley, August, 2017, Radiation Safety Manual, <https://ehs.berkeley.edu/sites/default/files/lines-of-services/radiation-safety/RSM2017.pdf>, accessed January 12, 2021.

production of radioactive waste that includes reduction in use, strict segregation of radioactive wastes from other wastes, and storage for decay and disposal program. Given that adequate safety controls, plans, and procedures are in place to limit exposure to radiation from radioisotopes, radiation-producing machines, and radioactive waste, the potential is low for proposed development to expose UC Berkeley occupants or the public to significant health or safety risks.

UC Berkeley projects implemented under the proposed LRDP Update would comply with controls and measures associated with radioactive materials and waste, and impacts would be *less than significant*.

Hazardous Materials Transportation

As discussed above, implementation of the proposed LRDP Update would increase hazardous materials use and hazardous waste generation at UC Berkeley. Consequently, the transport of hazardous materials to and from UC Berkeley would also increase. Transportation of chemicals on public roads, including the delivery of chemicals to UC Berkeley, must comply with USDOT requirements, including the requirements of the Hazardous Materials Transportation Act. Additionally, the transportation of hazardous materials by air, such as research samples, are required to abide by the requirements of the Hazardous Materials Transportation Act and the guidelines of the IATA. All hazardous waste generated in laboratories or other UC Berkeley facilities is picked up by EH&S or a licensed hazardous waste contractor under UC Berkeley oversight, and generators must properly package and label all unwanted hazardous materials prior to pick-up. Safe transportation procedures are outlined in the EH&S fact sheet, *Transporting Chemicals Safely on Campus*. All materials regulated in transportation must be shipped by an individual trained and certified by UC Berkeley to meet the requirements of the DOT Hazardous Materials Transportation Act requirements and the IATA DGR on identifying, marking, labeling, documenting and offering the material to a registered transport carrier. Under the proposed LRDP Update, UC Berkeley would continue to require compliance with these safety regulations, guidelines, and policies. Therefore, the impact of the increased transport of hazardous materials to and from UC Berkeley would be *less than significant*.

Biohazardous Materials

Implementation of the LRDP Update would increase laboratory and other research facility space, which could include increased use of biohazardous materials. The types of biological agents used in the future would likely remain largely the same as currently, though new research could create a need for new and different biological agents. An increase in use of biohazardous materials could potentially affect workers and the public through air (inhalation of aerosols), water (release to the sewer), waste disposal, and accidents. However, development pursuant to the proposed LRDP Update would continue to comply with UC Berkeley standards per CBP HAZ-1 and HAZ-2 in addition to the BUA Program, the Exposure Control Plan, and the Biological Safety Cabinet Program and all of these potential effects would be minimized through compliance. Although some of these programs are designed primarily for worker safety, they also control releases to the environment and exposure to the public at large by preventing releases to the air and the sanitary sewer.

Most biohazardous materials pose no significant hazard to the public because of their limited viability in the environment; however, others could pose a potential hazard if accidentally released or improperly handled.

Particulate-borne air emissions of bacteria and viruses would be controlled by HEPA filtration at a very high degree of efficiency, minimizing the potential for public exposure. Because of continued UC Berkeley compliance with regulatory requirements and current UC Berkeley guidelines for controlling employee exposures to biohazardous materials, the potential impact of increased use of biohazardous materials on employee health, the environment, and the public would be *less than significant*.

Biohazardous Waste

Research laboratories using biohazardous materials and animal care activities at UC Berkeley produce biohazardous waste. Most laboratory tissues, fluids, and cultures are potentially infectious waste. Potentially infected animal care wastes can include animal excreta, bedding and uneaten food, cage washing solutions, animal carcasses and tissues, workers' disposable protective clothing, and sharp objects such as needles, scalpels, and broken glass. At UC Berkeley, nonmedical sharps waste and animal carcasses not contaminated with infectious agents known to cause human illness are also handled as medical waste to protect custodial workers and to reduce public concern. Implementation of the proposed LRDP Update could increase campus biohazardous waste generation because use of biohazardous materials and research animals could increase.

As a large quantity generator of medical wastes, UC Berkeley is obligated to comply with the California Medical Waste Management Act. Additionally, UC Berkeley implements a Medical Waste Management Program. Existing UC Berkeley health and safety practices and compliance with State regulations would minimize the potential for adverse health effects related to biohazardous waste. New projects and waste management methods implemented under the proposed LRDP Update would comply with these practices. Therefore, the impact of increased generation of biohazardous waste on campus would be *less than significant*.

Transgenic Material

Implementation of the proposed LRDP Update would increase laboratory and other research facility space on the UC Berkeley campus, which in turn could increase research using transgenic organisms. Except for transgenic bacteria that could be infectious, transgenic microorganisms do not pose a threat to public health or the environment. If not properly segregated from the surrounding environment, transgenic plants could genetically contaminate nontransgenic plants in the surrounding area or adversely impact biodiversity through crosspollination.

As noted in CBP HAZ-3, all research involving transgenic organisms on the UC Berkeley campus is required to comply with the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules. The Guidelines specify containment practices for plants, microorganisms, and animals, depending on the potential hazard posed by the organism. The potential for exposure of UC Berkeley workers or the public to infectious transgenic organisms is minimized by compliance with the Centers for Disease Control and NIH guidelines for research involving biohazardous materials. All research involving transgenic plants must register with EH&S, and a permit from the USDA is required for open-field-based research involving transgenic plants. Most research involving transgenic plants on campus is conducted at the lowest plant biosafety level, BLP-1, with organisms that pose no risk. Furthermore, UC Berkeley's

Recombinant DNA Emergency Spill and Incident Reporting Procedures in a BSL 1 or BSL 2 Laboratory details the procedure that needs to be followed in case of recombinant DNA spills.

Controls, such as segregated and screened greenhouses, limit the potential for impact on plants in the surrounding area. New facilities constructed under the proposed LRDP Update that involve research using transgenic organisms would comply with existing programs and controls that minimize potential impacts of research involving transgenic organisms. Therefore, the impact of increased use of transgenic organisms on campus would be *less than significant*.

Laboratory Animals

The laboratory redevelopment anticipated under the proposed LRDP Update could include an increase in the number of laboratory animals at UC Berkeley, which could pose potential hazards to workers, building occupants, and the neighboring community if contacts between humans and animals were not effectively managed. In accordance with the United States Public Health Service regulations, the ACUC oversees all aspects of animal care in UC Berkeley facilities. Before any research involving live vertebrate animals can be initiated, a protocol for the activity must be prepared by the principal investigator and approved by the ACUC. Laboratory animal care practices must comply with the Animal Welfare Act, the National Research Council Guide for the Care and Use of Laboratory Animals, and the United States Public Health Service Policy on the Humane Care and Use of Laboratory Animals (see CBP HAZ-2). UC Berkeley has achieved a high level of compliance with regulatory guidelines concerning care and treatment of laboratory animals. New laboratories where animals would be involved in research and new animal care facilities constructed under the proposed LRDP Update would be designed and constructed to control the release of laboratory animals to the environment and would be operated in compliance with existing programs and controls to reduce the impacts resulting from the increase in the number of laboratory animals at UC Berkeley. Therefore, the impact of increased use of laboratory animals on campus would be *less than significant*.

Nonionizing Radiation

Implementation of the proposed LRDP Update would increase laboratory and other research facility space on the UC Berkeley campus, which in turn could increase research involving nonionizing radiation such as lasers. The hazards posed by nonionizing radiation devices used in research on the UC Berkeley campus are health and safety hazards to those who work in laboratories where such devices are used and, in the case of Class 4 lasers, laboratory fire hazards. As discussed in Section 5.8.1.1, Regulatory Framework, UC Berkeley complies with the requirements of CCR, Title 8, Section 5085 and implements a NIR safety program as described in the Non-Ionizing Radiation Manual. Compliance with CCR, Title 8 is required for all employers in the state of California. Enforcement of these regulations falls to Cal/OSHA, who inspects campus facilities to determine compliance with Title 8. Implementation of these policies and procedures would continue under the proposed LRDP Update. Therefore, the impact would be *less than significant*.

Summary

Compliance with applicable policies and regulations would minimize the risk of an adverse effect on the environment through the routine use, transport, and disposal of hazardous materials.

In addition, as part of the proposed project, UC Berkeley and future development projects would implement the hazards and hazardous materials (HAZ) CBPs listed here. This list identifies the CBPs that have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP HAZ-1 (Updated):** UC Berkeley will continue to implement the same (or equivalent) health and safety plans, programs, practices, and procedures related to the use, storage, disposal, or transportation of hazardous materials and wastes (including chemical, radioactive, and biohazardous materials and waste) during the LRDP planning horizon. These include, but are not limited to:
 - Requirements for safe transportation of hazardous materials
 - UC Berkeley Office of Environment, Health & Safety training programs and oversight
 - The Hazard Communication Program
 - Publication and promulgation of the Water Protection Policy, the drain disposal guidelines, the Wastewater Toxics Management Plan, and the Slug Control Plan
 - Requirements that laboratories have Chemical Hygiene Plans and a chemical inventory database
 - The Aboveground Storage Tank Spill Prevention Control and Countermeasure Plan and monitoring of underground storage tanks
 - Implementation of the hazardous waste disposal program and policies
 - The Green Labs Program
 - The Biosafety Program
 - The Medical Waste Management Program
 - The Laser Safety Program
 - The Radiation Safety Program
 - The Drain Disposal Restrictions

These programs may be subject to modification as regulations or UC Berkeley policies are developed or if the programs become obsolete through replacement by other programs that incorporate similar or more effective health and safety protection measures. However, any modifications must incorporate similar or more effective health and safety protection measures.

- **CBP HAZ-2:** UC Berkeley will continue to implement the same (or equivalent) programs related to laboratory animal use during the LRDP planning horizon, including, but not necessarily limited to, compliance with United States Public Health Service Regulations, the National Research Council Guide for the Care and Use of Laboratory Animals, and Animal Welfare Act regulations. These programs may be subject to modification as more stringent standards are developed or if the programs become obsolete through replacement by other programs that incorporate similar or more effective health and safety protection measures.
- **CBP HAZ-3:** UC Berkeley will continue to implement the same (or equivalent) programs related to transgenic materials use during the LRDP planning horizon, including, but not necessarily limited to, compliance with the National Institute of Health Guidelines for Research Involving Recombinant DNA Molecules, United States Department of Agriculture requirements for open-field-based research involving transgenic plants, and requiring registration with the UC Berkeley Office of Environment, Health & Safety for all research involving transgenic plants. These programs may be subject to modification as more stringent standards are developed or if the programs become obsolete through replacement by other programs that incorporate similar or more effective health and safety protection measures.

- **CBP HAZ-4:** UC Berkeley will continue to perform hazardous materials surveys prior to capital projects in existing UC Berkeley buildings. UC Berkeley will continue to comply with federal, State, and local regulations governing the abatement and handling of hazardous building materials and each project will address this requirement in all construction.

CBP HAZ-1 through CBP HAZ-4 establish a series of actions that UC Berkeley and future development must comply with to reduce risk from handling hazardous materials consistent with other existing federal, State, and UC regulations. The ongoing implementation of CBP HAZ-1 through CBP HAZ-4, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts from the routine transport, use, or disposal of hazardous materials. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction and short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Accordingly, implementation of the proposed LRDP Update, including the ongoing implementation of these CBPs and compliance with applicable regulations, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Housing Project #1 would involve demolition of the existing structures on the 0.92-acre site and the construction and operation of a new mixed-use building. Housing Project #1 would include student housing and student-serving space, with ground-floor commercial uses that would be accessible to the public.

Project Operation

Operation of the proposed mixed-use and residential buildings would involve the use of small amounts of hazardous materials, such as cleansers, paints, fertilizers, and pesticides, for cleaning and maintenance purposes. However, the proposed land use is not associated with uses that use, generate, store, or transport large quantities of hazardous materials; such uses generally include manufacturing, industrial, medical (e.g., hospital), and other similar uses.

Additionally, the use, storage, transport, and disposal of hazardous materials would be governed by existing regulations of several agencies, including the EPA, DTSC, USDOT, IATA, Cal/OSHA, and EH&S programs and policies as noted in CBP HAZ-1 through HAZ-3. Compliance with applicable laws and regulations governing the use, storage, transportation, and disposal of hazardous materials would ensure that all potentially hazardous materials are used and handled in an appropriate manner and would minimize the potential for safety impacts.

Therefore, substantial hazards to the public or the environment arising from the routine use, storage, transport, and disposal of hazardous materials during long-term operation of the proposed Housing

Projects #1 would not occur. Impacts would be *less than significant*, and no mitigation measures are necessary.

Project Construction

Project-related construction activities would use larger amounts of hazardous materials than would project operation. Construction activities would include the use of materials such as fuels, lubricants, and greases in construction equipment and coatings used in construction. There is also the potential for these materials to spill or to create hazardous conditions. However, the materials used would not be in such quantities or stored in such a manner as to pose a significant safety hazard. To prevent hazardous conditions, existing UC Berkeley, State, and federal laws, such as those listed under Section 5.8.1.1, Regulatory Framework, and CBP HAZ-1 would be enforced at the construction sites. Cal/OSHA has regulations concerning the use of hazardous materials, including requirements for safety training, exposure warnings, availability of safety equipment, and preparation of emergency action/prevention plans. Furthermore, these activities would also be short term or one time in nature and would cease upon completion of the construction phases for proposed Housing Project #1..

The demolition phase of proposed Housing Project #1 would demolish existing on-site structures. As stated in Section 5.8.1.2, Existing Conditions, buildings currently on the site were built between the years 1904 and 1950. Due to the age of the buildings, construction workers may potentially encounter LBP, ACMs, PCBs, and mercury during demolition activities. An environmental screen of the tenement-style apartment building on the site at 1921 Walnut Street, built in 1904, showed the presence of ACMs and the likelihood of lead-based paints.⁶⁰ The Phase I Preliminary Environmental Site Assessment for the car rental agency at 2161 University Avenue identified the possibility of ACMs in the vinyl floor tiles. This building was built in 1939 with a rear storage area added in 1996.⁶¹

Furthermore, an SGMP was prepared subsequent to the findings of the 2019 Phase I ESA for the proposed site. The Phase I ESA reported that residual contamination is still present on the site from former gas stations. The SGMP includes practices and procedures to be employed during construction activities to ensure less than significant impacts. The proposed practices and procedures are based on the results of environmental investigation activities conducted at the site in March and July 2020. Soil samples were analyzed for:

- Total petroleum hydrocarbons as gasoline (TPHg), TPH as diesel (TPHd), and TPH as motor oil (TPHmo)
- Volatile organic compounds (VOC)
- Semivolatile organic compounds (SVOC)
- Polychlorinated biphenyls (PCB)
- Organochlorine pesticides (OCP)
- Metals
- Asbestos

⁶⁰ Bob Charbonneau, April 24, 2020, Environmental Transaction Screen 1921 Walnut Street, Berkeley.

⁶¹ Bob Charbonneau, August 11, 2005, Preliminary Site Assessment Due Diligence Report for the Acquisition of Campus-Related Property.

Groundwater samples were analyzed for:

- TPHg, TPHd, and TPHmo
- VOCs
- SVOCs
- PCBs
- Metals

Based on the concentrations of lead on the site, soils between two and four feet below ground surface (bgs) in the southeast corner of the site would potentially be disposed of as Class I non-RCRA hazardous material.⁶² The approximate location of the Class I soil is shown on Figure 3 of the SGMP, Site Plan with Approximate Location of Class I Non-RCRA Hazardous Materials in Soil (see Appendix I, Hazardous Materials Data, of this Draft EIR). Furthermore, based on the elevated concentrations of petroleum hydrocarbons, soils in the southeast corner of the site at depths from 10 to 16 feet bgs would potentially be disposed of as Class II nonhazardous material.⁶³ The approximate location and depth of the Class II nonhazardous material in soil is shown on SGMP Figure 4, Site Plan with Approximate Locations of Class II Non-Hazardous Materials in Soil (see Appendix I, Hazardous Materials Data). All remaining material would be excavated and disposed of as unrestricted waste depending on the disposal facility's acceptance criteria.⁶⁴ Additional soil sampling, under a sampling plan reviewed and approved by campus EH&S, will be performed during or preceding excavation to determine final soil classification and disposition.

Additionally, the groundwater analytical results found elevated TPHd and TPHg concentrations in groundwater in the northeastern corner of the site. Groundwater at the site was encountered at depths of 5.5 feet to 10.5 feet bgs, and it is anticipated that groundwater dewatering would be required with the construction of two below-grade floors.⁶⁵ Therefore, a permit must be obtained from EBMUD, and testing must be conducted prior to the discharge of construction dewatering operations. According to UC Berkeley's Campus Design Standards, the project contractor must submit a dewatering plan prior to the start of construction that includes the plans, method, and equipment used for dewatering; a monitoring plan to determine drawdown impacts to adjacent structures, landscaping, and water courses; and how the extracted water will be disposed. The water disposal must be in accordance with applicable State and local regulations. The dewatering plan must be approved by EH&S and Facilities Services prior to the start of construction.

The SGMP also includes:

- Health and safety measures, including the preparation of a health and safety plan and the presence of a health and safety officer at all time during excavation activities.
- Soil management procedures related to material segregation and disposal, soil stockpiling, soil tracking and disposal, the on-site movement of soils, and soil import criteria.

⁶² Non-RCRA hazardous waste means waste that requires disposal at a Class I landfill. A class I landfill is a hazardous waste landfill.

⁶³ Class II waste is any waste that cannot be classified as hazardous or inert. These wastes are less threatening to human health and the environment. These wastes may be disposed of at a permitted municipal landfill.

⁶⁴ Langan Engineering, November 18, 2020, Soil and Groundwater Management Plan (SGMP) Helen Diller Anchor House.

⁶⁵ Langan Engineering, November 18, 2020, Soil and Groundwater Management Plan (SGMP) Helen Diller Anchor House.

- Odor control measures.
- Dust control procedures.
- Stormwater pollution controls.
- Contingency procedures for unknown and unexpected conditions.

The City of Berkeley's Toxics Management Division would also review building permits prior to any construction.

Five hydraulic hoist rams were identified at locations that formerly repaired or maintained vehicles on the site. The existence of the five hydraulic hoist rams represents a REC. These hydraulic hoist rams contain an unknown volume of hydraulic fluid and the condition of the hydraulic hoists is unknown; however, the size of the external hydraulic fluid reservoir observed at one of the hoists at 1952 Oxford Street suggests the volume to be no greater than 20 gallons. According to the STWRCB, hydraulic hoists are not supposed to be considered a UST or regulated except in cases of "significant" leakage but will likely require removal under permit and/or oversight of the Berkeley Fire Department.⁶⁶

Adherence to federal, State, and local regulations; BAAQMD's District Regulation 11, Rules 1 and 2; current UC Berkeley policies; CBP HAZ-1 through CBP HAZ-4; and the requirements of the project-specific SGMP would minimize the exposure of construction workers or the public to contaminated building materials and soil and groundwater, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Housing Project #2 would consist of three components to be constructed on the 2.8-acre site. It would include constructing and operating housing for UC Berkeley students and faculty/staff with associated amenities, permanent affordable and supportive housing, including on-site services and open space that would be accessible to the public.

Project Operation

Like Housing Project #1, the operation of the proposed mixed-use and residential buildings would involve the use of small amounts of hazardous materials, such as cleansers, paints, fertilizers, and pesticides for cleaning and maintenance purposes. However, the proposed land use is not associated with uses that use, generate, store, or transport large quantities of hazardous materials; such uses generally include manufacturing, industrial, medical (e.g., hospital), and other similar uses.

Additionally, the use, storage, transport, and disposal of hazardous materials would be governed by existing regulations of several agencies, including the EPA, DTSC, USDOT, IATA, Cal/OSHA, and EH&S programs and policies. Compliance with applicable laws and regulations governing the use, storage, transportation, and

⁶⁶ PII Environmental, Inc, January 21, 2019. Phase I Environmental Site Assessment (ESA) Report Gateway Project, 5-Parcels, Berkeley, California.

disposal of hazardous materials would ensure that all potentially hazardous materials are used and handled in an appropriate manner and would minimize the potential for safety impacts.

Therefore, substantial hazards to the public or the environment arising from the routine use, storage, transport, and disposal of hazardous materials during long-term operation of the proposed Housing Project #2 would not occur. Impacts would be *less than significant*, and no mitigation measures are necessary.

Project Construction

Similar to Housing Project #1, the project-related construction activities for Housing Project #2 would use larger amounts of hazardous materials than would project operation. Construction activities would include the use of materials such as fuels, lubricants, and greases in construction equipment and coatings used in construction. However, the materials used would not be in such quantities or stored in such a manner as to pose a significant safety hazard. These activities would also be short term or one time in nature and would cease upon completion of the construction phases for proposed Housing Project #2. Project construction workers would also be trained in safe handling of hazardous materials use in accordance with Cal/OSHA requirements.

Additionally, as with project operation, the use, storage, transport, and disposal of construction-related hazardous materials would be required to conform to existing laws and regulations. Compliance with applicable laws and regulations would ensure that all potentially hazardous materials are used and handled in an appropriate manner and would minimize the potential for safety impacts. Furthermore, strict adherence to applicable EH&S requirements would apply throughout the duration of the project construction phase.

The Phase I ESA for People's Park found no RECs, HRECs, or CRECs on the project site. However, the report did note the possibility of ACMs and LBP that may have been present in the former buildings at the site.

Adherence to federal, State, and local regulations; BAAQMD's District Regulation 11, Rules 1 and 2; current UC Berkeley policies; and CBP HAZ-1 through CBP HAZ-4 would minimize the exposure of construction workers or the public to contaminated building materials, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

HAZ-2	The proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
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LRDP Update

Under current practice at UC Berkeley, all hazardous waste held on the UC Berkeley campus must comply with all applicable regulations, including use of suitable containers that are closed at all times (when not adding or removing waste) and secondary containment. The USDOT Office of Hazardous Materials Safety prescribes strict regulations for the transportation of hazardous materials, as described in 49 CFR, which

also regulates transportation by air. Transportation along state roadways within or near UC Berkeley is subject to all hazardous materials transportation regulations established by the CHP pursuant to the California Vehicle Code. Any air transport will be governed by the regulations of the IATA. UC Berkeley policy requires that all hazardous materials shipped on public roads or by air be packaged in compliance with USDOT and IATA requirements. Compliance with these regulations minimizes the potential for accidental release of hazardous materials being transported to or from UC Berkeley. New projects constructed under the proposed LRDP Update would comply with the CBC, which identifies the minimum standards for structural design and construction in California, including specific requirements for seismic safety. In addition, the projects would comply with the University of California Seismic Safety Policy, which requires design provisions for new structures not included in the CBC, including adequate anchorage of nonstructural building elements such as equipment and material storage facilities. Construction according to these standards would minimize the potential for accidental releases of hazardous materials during an earthquake. New construction would also conform to the adopted CFC, which establishes standards for the storage of hazardous materials. Both the BFD and the ACFD, which provide fire protection to the UC Berkeley campus, have hazardous materials response capabilities, enabling them to respond effectively to fires in facilities that store hazardous materials. (See also Chapter 5.13, Public Services, for additional information about emergency response.)

UC Berkeley HMBPs describe procedures to follow in the event of an accidental release of hazardous materials. The EH&S DURT can respond to most incidents at UC Berkeley and, if necessary, can arrange for appropriate assistance from the BFD, the ACFD, and outside emergency response contractors. One State law governing the storage of hazardous materials is the CalARP. This law addresses facilities that contain specified hazardous materials or “regulated substances” that, if involved in an accidental release, could result in adverse off-site consequences. Detailed chemical inventories maintained by UC Berkeley to comply with the UC Berkeley HMBPs show that the use or storage of regulated substances at any current UC Berkeley location is not large enough to trigger CalARP requirements. Thus, although the UC Berkeley HMBPs require UC Berkeley to define emergency response procedures, a risk management plan under CalARP does not need to be submitted, which means maximum storage quantities are below levels that would potentially cause off-site consequences. UC Berkeley best practices would continue to inventory hazardous materials in future locations. Given past experience, quantities above CalARP thresholds are not anticipated. Should that occur, UC Berkeley would comply with all applicable CalARP reporting requirements, including preparation of a risk management plan if required. Compliance with all applicable federal and State laws as well as UC Berkeley programs, practices, and procedures related to the transportation, storage, and use of hazardous materials would continue under the proposed LRDP Update, minimizing the potential for a release and providing for prompt and effective cleanup if an accidental release occurs. Therefore, the impacts related to accidental release from the increased transportation, storage, or use of hazardous materials under the proposed LRDP Update would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

Use of hazardous materials during construction could potentially include fuels, lubricants, greases, and coatings. Use of hazardous materials after construction could potentially include cleaning solvents,

fertilizers, pesticides, and other materials used in the regular maintenance and operation of the proposed uses. An accidental release of any of these materials could pose a health hazard to the public. Furthermore, demolition of the existing on-site structures at the Housing Project #1 site could potentially result in the release of hazardous building materials (e.g., ACMs) into the environment.

Existing laws, regulations, policies, and procedures that would serve to prevent a release of hazardous materials include applicable federal, State, and local laws and regulations described in Section 5.8.1.1, Regulatory Framework, of this chapter, UC Berkeley's CMP HAZ-1 and HAZ_4, and the stormwater best management practices required for the proposed Housing Projects #1 and #2 (see Chapter 5.9, Hydrology and Water Quality, for additional detail). In addition, any work that would potentially expose workers or the public to ACMs and LBP would be regulated by CCR, Title 8, Section 1529 and Section 1532.1, CFR, Title 40, Part 61, Subpart M and Title 29, Section 1926.62, and BAAQMD's District Regulation 11, Rule 2, and District Regulation 11, Rule 1. ACM and LBP abatement must be performed and monitored by contractors with appropriate certification from the California Department of Health Services. Furthermore, the removal of PCBs and mercury-containing light ballast would be completed in accordance with applicable regulations pursuant to 40 CFR 761 and 40 CFR 273 by workers with the HAZWOPER training, as outlined in 29 CFR 1910.120 and 8 CCR 5192. Compliance with these existing laws, regulations, policies, and procedures would ensure that future development activities would not create a significant hazard to the public, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

HAZ-3	The proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school in a manner that would have an adverse impact on students and staff.
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LRDP Update

As stated in Section 5.8.1.2, Existing Conditions, one public high school, three private schools, and three childcare facilities are within a quarter-mile radius of the EIR Study Area.

Demolition and remediation activities during construction from potential future projects that implement the proposed LRDP Update could generate wind-blown fugitive dust containing hazardous substances. As detailed in Chapter 5.2, Air Quality, fugitive dust generated by construction activities could expose off-site sensitive receptors to substantial concentrations of air pollutants. Emissions would be regulated by BAAQMD's requirements, as detailed in CBP AIR-2. BAAQMD's fugitive dust control basic control measures would also be implemented during construction, as detailed in CBP AIR-2. Implementation of these basic fugitive dust control basic control measures and adherence to the requirements of BAAQMD and the Campus Design Standards would minimize fugitive dust emissions to a less-than-significant level.

Additionally, as a result of the implementation of the proposed LRDP Update, hazardous materials could be handled within a quarter mile of existing schools and daycare centers during the operational phase of the

proposed project. Potential health risks for occupants of these schools resulting from routine air emissions of hazardous chemicals under existing conditions and with the implementation of the proposed LRDP Update are analyzed in Chapter 5.2, Air Quality. With respect to storage and handling of hazardous substances on the UC Berkeley campus, these materials would not exist in quantities sufficient to pose a risk to occupants of the nearby schools in case of an accidental release. Hazardous materials in laboratories are typically handled in small quantities, in which case potential consequences of accidental releases would be limited to a single building, and people outside the buildings would not be exposed to significant amounts of hazardous materials. Furthermore, on a quarterly basis, EH&S compares quantities of chemicals stored in each UC Berkeley campus location to the CalARP thresholds. Under CalARP, if the quantities of a particular chemical exceed the threshold for that chemical, UC Berkeley is required to prepare a risk management plan to prevent off-site consequences from accidental releases of the hazardous materials stored in quantities above the threshold. The quantities of chemicals currently stored in laboratories and other locations on the UC Berkeley campus do not meet the CalARP thresholds, so a risk management plan is not required. If, under the proposed LRDP Update, a facility is proposed that stores or handles specific hazardous chemicals in quantities that exceed CalARP thresholds, a risk management plan would be prepared for that facility to prevent off-site consequences from accidental releases.

Furthermore, UC Berkeley would continue to comply with the provisions of Section 15186 of the CEQA Guidelines (that respond to PRC Section 21151.4), requiring disclosure of potential health impacts associated with any projects near schools, throughout implementation of the proposed LRDP Update. The risks of routine toxic air contaminant emissions to sensitive receptors, including schools and daycare centers, are analyzed in Chapter 5.2, Air Quality. Because the quantities of chemicals stored in laboratories and other research facilities are typically small and UC Berkeley would continue to evaluate chemical storage in existing and proposed laboratories on the UC Berkeley campus relative to CalARP thresholds and comply with CalARP regulations, the impact to those attending existing or proposed schools or childcare centers near the laboratories would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Redevelopment activities such as site grading and remediation activities could generate wind-blown fugitive dust containing hazardous substances. The Montessori Family School at 1850 Scenic Avenue is a preschool and kindergarten approximately a quarter mile to the northeast of the project site.

Construction activities would require the use of heavy equipment and would result in greater emissions than project operation. Fugitive dust would be generated primarily from demolition, ground-disturbing, and material-loading activities in addition to vehicles traveling over unpaved surfaces. However, as detailed in Chapter 5.2, Air Quality, fugitive dust associated with construction activities would not expose off-site sensitive receptors to substantial concentrations of air pollutants. Fugitive dust emissions are considered significant unless the project implements the BAAQMD's basic control measures for fugitive dust control during construction. Coarse inhalable particulate matter (PM₁₀) is typically the most significant source of air pollution from the dust generated from construction. The amount of dust generated during construction would be highly variable and dependent on the amount of material disturbed, the type of material, moisture

content, and meteorological conditions. Following BAAQMD's basic fugitive dust control measures, as outlined in CBP AIR-2, and adherence to related requirements in the Campus Design Standards would minimize fugitive dust emissions to a less-than-significant level.

Additionally, hazardous materials stored and handled on the UC Berkeley campus would not exist in quantities sufficient to pose a risk to occupants of the nearby schools in case of an accidental release and a risk management plan would be prepared in accordance with CalARP requirements If necessary. UC Berkeley would also continue to comply with the provisions of Section 15186 of the CEQA Guidelines (that respond to PRC Section 21151.4). Therefore, this impact would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Fugitive dust during the construction phase could generate wind-blown hazardous substances that could affect neighboring schools. The Cornerstone Children's Center located at 2407 Dana Street is a nursery and preschool approximately 700 feet to the northwest of the proposed Housing Project #2 site. The Haste Street Child Development Center at 2339 Haste Street is approximately 1,000 feet west of the site.

Greater construction emissions are associated with the use of heavy equipment for construction activities. As detailed in Chapter 5.2, Air Quality, fugitive dust associated with construction activities would not expose off-site sensitive receptors to substantial concentrations of air pollutants. Fugitive dust emissions would be regulated by BAAQMD's requirements. Following BAAQMD's basic fugitive dust control measures, as outlined in CBP AIR-2, and adherence to related requirements in the Campus Design Standards would minimize fugitive dust emissions to a less-than-significant level. Therefore, this impact would be *less than significant*.

Significance without Mitigation: Less than significant.

HAZ-4	The proposed project would be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 but would not, as a result, create a significant hazard to the public or the environment.
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LRDP Update

Properties owned or acquired since UC Berkeley was founded in 1868 have the potential to contain soil and/or groundwater contamination from historical activities by UC Berkeley or previous owners. Known historical contamination of soil and/or groundwater because of leaking underground petroleum storage tanks has been present at several sites, as shown in Table 5.8-1, Hazardous Material Sites in and Adjacent to the EIR Study Area. The contamination at these sites has been fully characterized and remediated under local and regional agency oversight. Residual contamination at these sites is believed to pose no threat to human health and the environment if not disturbed by construction or other activities. Should UC Berkeley develop specific plans for these sites, it would conduct further analysis and appropriately manage any contamination that could be encountered during construction as detailed in CBP HAZ-1 and CBP HAZ-4.

With respect to other UC Berkeley campus sites where contamination may be present due to causes other than LUSTs (see Table 5.8-1, Hazardous Material Sites in and Adjacent to the EIR Study Area), EH&S maintains files for each UC Berkeley building, with information on site use involving hazardous materials, regulatory actions, and potential contamination. To minimize the risk that construction would take place on a site with unknown contamination, EH&S or qualified consultants under UC Berkeley oversight conduct historical reviews of past site uses and regulatory actions for major construction projects on the Campus Park to assess the potential for hazardous materials releases. UC Berkeley requires that “due diligence” assessments (Preliminary Phase I Environmental Site Assessments) be performed for all new ground-disturbing construction projects off the Campus Park. If the Preliminary Phase I Environmental Site Assessment reveals activities or practices that may have resulted in releases of hazardous materials to the soil or groundwater, such as underground storage of fuel, samples of the surface and subsurface materials are collected and tested for potential contaminants. If contaminants are found, UC Berkeley EH&S works with UC Berkeley or UC Berkeley sponsor construction projects to manage any contamination in accordance with applicable regulations and UC Berkeley requirements. Construction would not proceed until a plan to address the contamination has been developed.

Furthermore, the only open cases, as shown in Table 5.8-1, that are in close proximity to the EIR Study Area are related to the LBNL. Though the LBNL is contiguous with the UC Berkeley Hill Campus West and East, it is managed by the Department of Energy and is outside the EIR Study Area. The DTSC-permitted hazardous waste handling facility (HWHF), is in the eastern portion of LBNL at Building 85 and its associated yard area. The HWHF is permitted for storage and treatment of hazardous and mixed wastes generated at LBNL. LBNL ships the wastes from the HWHF to permitted recycling and disposal facilities. The first permit for the HWHF was issued in 1983. Since then, LBNL has submitted timely permit renewal applications.

Furthermore, in 1991 DTSC completed a RCRA Facility Assessment of the LBNL site and identified 174 units as potential areas of soil, groundwater, and surface water contamination, 8 of which were identified as radiological units. The characterization and cleanup of the 8 radiological units are under the oversight of the Department of Energy, which has sole jurisdiction over the radiological units. The remaining 166 units were addressed under the authority of the DTSC. LBNL performed corrective measures in consultation with DTSC, the San Francisco Bay RWQCB, and the City of Berkeley Toxics Management Division, including removing sources of contamination, stopping discharge of contaminated groundwater to surface waters, eliminating potential pathways that could contaminate groundwater, and preventing further migration of contaminated groundwater. In 2006, DTSC approved the groundwater monitoring and management plan and the soil management plan prepared by LBNL. The groundwater corrective measures are currently in the operation, maintenance, and monitoring phase. The cleanup of past releases is ongoing at LBNL under the oversight of the DTSC Berkeley Office. LBNL submits annual progress reports on the RCRA corrective action program activities, with the most recent report submitted July 26, 2020. The groundwater monitoring data indicate that the corrective measures continue to be effective in reducing concentrations of contaminants in the groundwater, that groundwater plumes are stable or attenuating, and that

contaminants are not migrating off-site.⁶⁷ Therefore, development on UC Berkeley property adjoining the LBNL site would not be significantly affected by contamination on the LBNL site.

As part of the proposed project, UC Berkeley and future development projects would implement the following hazards and hazardous materials (HAZ) CBP:

CBP HAZ-5: UC Berkeley will continue to perform site histories and due diligence assessments of all sites where ground-disturbing construction is proposed, to assess the potential for soil and groundwater contamination resulting from past or current site land uses at the site or in the vicinity. The investigation will include review of regulatory records, historical maps and other historical documents, and inspection of current site conditions. UC Berkeley will act to protect the health and safety of workers or others potentially exposed should hazardous site conditions be found.

CBP HAZ-5 establishes a series of actions and procedures that UC Berkeley and future development must comply with to reduce risks associated with hazardous materials sites. The ongoing implementation of CBP HAZ-5, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts associated with hazardous materials sites. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Implementation of historical reviews for sites on the Campus Park, the requirement for Preliminary Phase I Environmental Site Assessments for all significant ground-disturbing construction projects off the Campus Park, and UC Berkeley CBPs would minimize the potential that unexpected contamination would be encountered and would reduce the significance of the impact to a *less-than-significant* level.

Significance without Mitigation: Less than significant.

Housing Project #1

The Housing Project #1 site is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 but received full regulatory review and a request to RWQCB for closure in September 2004 from the City of Berkeley's Toxics Management Division. Closure was approved by the RWQCB in January 2005. The closure letter issued by the RWQCB indicated that residual contamination still remains on the site, but that levels in both soil and groundwater were below environmental screening levels. No other adjacent properties appear to pose any significant risk to the subject property.

As described in impact discussion HAZ-1, due to residual contamination in soil and groundwater, an SGMP was prepared for the project site, and the City of Berkeley's Toxics Management Division would review building permits prior to any construction. Contaminated soil would be disposed of in compliance with

⁶⁷ California Department of Toxic Substances Control, Lawrence Berkeley National Laboratory (80001259), https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=80001259#permitting, accessed September 1, 2020.

federal and State regulations, and a dewatering activity would comply with EBMUD's requirements and UC Berkeley's Campus Design Standards.

Therefore, with the implementation of federal, State, and local regulations, current UC Berkeley standards, and the requirements of the SGMP, hazards to the public or the environment would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The Housing Project #2 site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and would result in *no impacts* to the public or the environment.

Significance without Mitigation: No Impact.

HAZ-5	The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
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LRDP Update

Development pursuant to the proposed LRDP Update would comply with the provisions of the CFC and the CBC. These provisions would ensure that building and life safety measures are incorporated into future development and would facilitate implementation of emergency response plans. During construction, the future development would comply with all applicable provisions of the CFC to ensure fire safety during the construction phase.

Furthermore, UC Berkeley implements an EOP to ensure the most effective allocation of resources for the maximum benefit and protection of the civilian population in time of emergency. The UC Berkeley EOP's objective is to incorporate and coordinate all available UC Berkeley resources into an efficient organization capable of responding to any emergency. Though no EOP can prevent all death and destruction, solid plans carried out by knowledgeable and well-trained personnel will minimize losses. UC Berkeley's EOP establishes the emergency organization and assigns tasks and general procedures. It provides for coordination of planning efforts of the various emergency staff and service elements using the Standardized Emergency Management System and National Incident Management System.

The proposed LRDP Update would increase UC Berkeley's staff and student populations, and traffic congestion may increase. Thus, in the event of an accident or natural disaster, evacuation plans and routes could be adversely affected. However, UC Berkeley's OEM commands UC Berkeley's EOC. The EOC responds to extraordinary emergency situations, including natural disasters. Further, the proposed LRDP Update includes the following Campus Land Use objective, which would ensure emergency evacuation routes are maintained:

Reduce risk to life, property, and natural resources by managing vegetation and by improving emergency evacuation and access routes, guided by the Hill Campus Wildland Vegetative Fuel

Management Plan. Highly flammable plant species should be removed over time, while the growth of fire-resistant species to reduce wildfire risks and enhance biodiversity should be prioritized.

Additionally, as detailed in Chapter 5.15, Transportation, all UC Berkeley campus roadway reconfigurations on campus would be designed and constructed in a manner consistent with the UC Facilities Manual, which notes that UC Berkeley must comply with the California Building Standards Code, Parts 1- to 12 and all amendments. UC Berkeley would also comply with applicable federal, State, and local agency regulations related to roadway and transportation facility design. The proposed LRDP Update's multi-modal network would also not conflict with or block the UC Berkeley campus fire access routes. Additionally, emergency responders maintain response plans that include use of alternate routes, sirens, emergency vehicle preemption at traffic signals, and other methods to bypass congestion and minimize response times. California law also requires drivers to yield the right-of-way to emergency vehicles and remain stopped until the emergency vehicle passes.

Therefore, the buildout of the proposed LRDP Update would not result in substantial changes to the circulation patterns or emergency access routes and would not block or otherwise interfere with use of evacuation routes. Buildout would not interfere with operation of UC Berkeley's OEM and would not interfere with operations of emergency response agencies or with coordination and cooperation between such agencies; thus, impacts to emergency response planning would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

The proposed Housing Project #1 would result in a significant impact if any physical improvements impede emergency response to the project site or the immediate vicinity, or if improvements otherwise interfere with emergency evacuation plans.

The development of the proposed Housing Project #1 is designed and would be implemented so as not to interfere with or impair the implementation of an adopted emergency response or evacuation plan. Emergency response issues are addressed by UC Berkeley's EOP and the City of Berkeley's EOP. UC Berkeley's OEM is responsible for emergency response preparedness programs, plans, and procedures to protect the health and safety students and staff. The OEM works collaboratively with the City of Berkeley's OES, as necessary, to respond to, recover from, and reduce the effects of risks associated with emergencies of all types and sizes. Furthermore, the proposed Housing Project #1 would comply with the provisions of the CFC and the CBC. During construction, the project would be required to comply with all applicable provisions of the CFC to ensure fire safety during the construction phase.

The proposed Housing Project #1 would not include any features that would impede the implementation of UC Berkeley, the City of Berkeley, Alameda County, or emergency response providers' ongoing emergency response and evacuation planning. Furthermore, implementation of proposed Housing Project #1 would comply with all applicable laws and regulations regarding emergency preparedness. Therefore, the impact would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The proposed Housing Project #2 would result in a significant impact if it would involve physical improvements that would impede emergency response to the project site or the immediate vicinity, or if it would otherwise interfere with emergency evacuation plans.

The proposed Housing Project #2 would be required to comply with the provisions of the CFC and the CBC, which would ensure that building and life safety measures are incorporated into the proposed project and would facilitate implementation of emergency response plans. Future development plans would include fire and emergency access through all phases of construction and operation. During construction, the project would be required to comply with all applicable provisions of the CFC to ensure fire safety during the construction phase.

As discussed in Section 5.8.1.1, the City of Berkeley and UC Berkeley have prepared EOPs that identify and allocate resources in response to emergencies, from preparation through recovery. The EOPs identify the City and UC Berkeley's emergency planning, organizational, and response policies and procedures and how they would be coordinated with emergency responses from other levels of government. The proposed Housing Project #2 would not involve physical components that would interfere with the ability of UC Berkeley, the City of Berkeley, Alameda County, or emergency response service providers to implement emergency response activities within the project site or vicinity.

Compliance with applicable laws and regulations regarding emergency preparedness would ensure that the proposed Housing Project #2 would not interfere with an adopted emergency response plan or emergency evacuation plan, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

HAZ-6	The proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in a cumulative impact with respect to hazards and hazardous materials.
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LRDP Update

The cumulative setting includes growth within the EIR Study Area in combination with projected growth in the rest of Alameda County, Contra Costa County, and the surrounding region. As discussed above, potential future development under the proposed project would not result in significant impacts from hazardous materials. Where the EIR Study Area contains sites included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5, compliance with federal, State, local, and UC Berkeley regulations would reduce these impacts to less than significant. Furthermore, implementation of the proposed project would not interfere with implementation of emergency response plans.

Cumulative foreseeable development in adjacent jurisdictions, as listed in Chapter 5, Environmental Analysis, would be subject to the same federal, State, and local regulations as well as regional safety plans such as the Alameda County EOP and the Contra Costa County EOP. Hazards and hazardous waste impacts are typically unique to each site and do not usually contribute to cumulative impacts. Cumulative development projects would be required to assess potential hazardous materials impacts on the development site prior to grading. Since impacts associated with hazardous materials are by their nature focused on specific sites or areas, the less-than-significant impacts in the EIR Study Area from the proposed project would not contribute to a cumulative increase in hazards in the immediate vicinity of the EIR Study Area, Alameda County, Contra Costa County, or the greater region. Therefore, cumulative impacts associated with hazards and hazardous materials would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. Cumulative impacts from Housing Projects #1 and #2 are incorporated into the cumulative impact analysis of the proposed LRDP Update.

Significance without Mitigation: Less than significant.

5.9 HYDROLOGY AND WATER QUALITY

This chapter describes the potential hydrology and water quality impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential hydrology and water quality impacts, and identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts.

5.9.1 ENVIRONMENTAL SETTING

5.9.1.1 REGULATORY FRAMEWORK

Federal

Clean Water Act

The United States Environmental Protection Agency (USEPA) is the lead federal agency responsible for water quality management. The Clean Water Act (CWA) (codified at 33 United States Code Sections 1251 to 1376) of 1972 is the primary federal law that governs and authorizes water quality control activities by the EPA, as well as the states. Various elements of the CWA address water quality, and they are discussed herein.

Permits to dredge or fill waters of the United States are administered by the United States Army Corps of Engineers (USACE) under Section 404 of the CWA. "Waters of the United States" are defined as territorial seas and traditional navigable waters, perennial and intermittent tributaries to those waters, lakes and ponds and impoundments of jurisdictional waters, and wetlands adjacent to jurisdictional waters. The regulatory branch of the USACE is responsible for implementing and enforcing Section 404 of the CWA and issuing permits. Any activity that discharges fill material and/or requires excavation in waters of the United States must obtain a Section 404 permit. Before issuing a permit, the USACE requires that an analysis be conducted to demonstrate that the proposed project is the least environmentally damaging practicable alternative. Also, the USACE is required to comply with the National Environmental Protection Act before it may issue an individual Section 404 permit.

Under Section 401 of the CWA, every applicant for a Section 404 permit that may result in a discharge to a water body must first obtain State Water Quality Certification that the proposed activity will comply with State water quality standards. Certifications are issued in conjunction with USACE Section 404 permits for dredge and fill discharges. In addition, an application for Individual Water Quality Certification and/or Waste Discharge Requirements must be submitted for any activity that would result in the placement of dredged or fill material in waters of the state that are not jurisdictional to the USACE, such as isolated wetlands, to ensure that the proposed activity complies with State water quality standards. In California, the authority to either grant water quality certification or waive the requirement is delegated by the State Water Resources Control Board (SWRCB) to its nine Regional Water Quality Control Boards (RWQCB).

Under federal law, the USEPA has published water quality regulations under Volume 40 of the Code of Federal Regulations. Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of two elements: (1) designated beneficial uses of the water body in question and (2) criteria that protect the designated uses. Section 304(a) requires the USEPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. In California, the USEPA has delegated authority to the SWRCB and its RWQCBs to identify beneficial uses and adopt applicable water quality objectives.

When water quality does not meet CWA standards and compromises designated beneficial uses of a receiving water body, Section 303(d) of the CWA requires that water body be identified and listed as “impaired.” Once a water body has been designated as impaired, a total maximum daily load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body can receive without exceeding applicable water quality standards, with a factor of safety included. Once established, the TMDL allocates the loads among current and future pollutant sources to the water body.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program was established by the CWA to regulate municipal and industrial discharges to surface waters of the United States, including discharges from municipal separate storm sewer systems (MS4s). Federal NPDES permit regulations have been established for broad categories of discharges, including point-source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify effluent and receiving water limits on allowable concentrations and/or mass emissions of pollutants in the discharge; prohibitions on discharges not specifically allowed under the permit; and provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities.

Under the NPDES program, all facilities that discharge pollutants into waters of the United States are required to obtain an NPDES permit. Requirements for stormwater discharges are also regulated under this program. In California, the NPDES permit program is administered by the SWRCB through the nine RWQCBs. UC Berkeley lies within the jurisdiction of the San Francisco Bay RWQCB (Region 2) and is subject to the waste discharge requirements for the Phase II Small MS4 Permit (Order No. 2013-0001-DWQ, NPDES Permit No. CAS000004) with the last amendment, Order No. WQ 2018-0007-EXEC, issued in March 2018.

Under Provision F.5.g of the NPDES Permit, the co-permittees use their planning authority to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows. This goal is accomplished primarily through the implementation of site design measures to reduce project site runoff for all projects that create and/or replace between 2,500 and 5,000 square feet of impervious surface. Also, projects that create and/or replace 5,000 square feet or more of impervious surface need to implement source-control measures and sizing criteria for stormwater retention and treatment.

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA also issues Flood Insurance Rate Maps (FIRM) that identify which land areas are subject to flooding. These maps provide flood information and identify community flood hazard zones. The design standard for flood protection is established by FEMA. FEMA's minimum level of flood protection for new development is the 100-year flood event, also described as a flood that has a 1-in-100 chance of occurring in any given year.

As required by the FEMA regulations, all development constructed within a Special Flood Hazard Zone (as delineated on the FIRM) must be elevated so that the lowest floor is at or above the base flood elevation level. The term “development” is defined by FEMA as any human-made change to improved or unimproved real estate, including, but not limited to, buildings, other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials. Per these regulations, if development in these areas occurs, a hydrologic and hydraulic analysis must be performed prior to the start of development and must demonstrate that the development does not cause any rise in base flood elevation levels, because no rise is permitted within regulatory floodways. Upon completion of any development that changes existing Special Flood Hazard Area boundaries, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision, as soon as practicable, but not later than six months after such data becomes available.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act provides the basic authority for the United States Fish and Wildlife Service (USFWS) to evaluate impacts to fish and wildlife from proposed water resource development projects. This act requires that all federal agencies consult with the USFWS, the National Marine Fisheries Service, and State wildlife agencies (i.e., the California Department of Fish and Wildlife [CDFW]) for activities that affect, control, or modify waters of any stream or body of water. Under this act, the USFWS has responsibility for reviewing and commenting on all water resources projects.

If a project may result in the “incidental take” of a listed species, an incidental take permit is required. An incidental take permit allows a developer to proceed with an activity that is legal in all other respects but that results in the “incidental taking” of a listed species. A habitat conservation plan must also accompany an application for an incidental take permit to ensure that the effects of the permitted action on listed species are adequately minimized and mitigated. The USFWS is also responsible for implementing the federal Endangered Species Act (ESA). Section 7 of the ESA requires all federal agencies to consult with the USFWS when an action the agency carries out, funds, or authorizes may affect a listed endangered or threatened species.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code Sections 13000 et seq.) is the basic water quality control law for California. This act established the SWRCB and divides the state into nine regional basins, each under the jurisdiction of a RWQCB. The SWRCB is the primary State agency responsible for the protection of California's water quality and groundwater supplies. The RWQCBs carry out the regulation, protection, and administration of water quality in each region. Each regional board is required to adopt a water quality control plan or basin plan that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water quality conditions and problems. As stated previously, UC Berkeley is within the jurisdiction of the San Francisco Bay RWQCB (Region 2).

The Porter-Cologne Act also authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements, NPDES permits, Section 401 water quality certifications, or other approvals. Other State agencies with jurisdiction over water quality regulation in California include the California Department of Health Services for drinking water regulations, the CDFW, and the Office of Environmental Health and Hazard Assessment.

State Water Resources Control Board

In California, the SWRCB has broad authority over water quality control issues for the state. The SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the State by the federal government under the CWA.

Regional authority for planning, permitting, and enforcement is delegated to the nine RWQCBs. The regional boards are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. The EIR Study Area is within the jurisdiction of the San Francisco Bay RWQCB (Region 2), which regulates surface water and groundwater quality in San Francisco Bay. The RWQCB's jurisdiction includes all the San Francisco Bay's segments extending to the mouth of the Sacramento-San Joaquin Delta.

The San Francisco Bay RWQCB addresses regionwide water quality issues through the creation and triennial update of the San Francisco Bay Basin Water Quality Control Plan (Basin Plan). The Basin Plan was adopted in 1995 and most recently amended in 2019. It designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters designated in the Basin Plan.¹

¹ San Francisco Bay RWQCB, 2019, Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin, https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/docs/BP_all_chapters.pdf, accessed on December 22, 2020.

State Water Resources Control Board Construction General Permit

In California, the SWRCB has broad authority over water quality control issues for the state. The SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the State by the federal government under the CWA.

Construction activities that disturb one or more acres of land that could impact hydrologic resources must comply with the requirements of the SWRCB Construction General Permit (2009-0009-DWQ) as amended by 2010-0014-DWQ and 2012-0006-DWQ. Under the terms of the permit, applicants must file Permit Registration Documents (PRD) with the SWRCB prior to the start of construction. The PRDs include a notice of intent, risk assessment, site map, Stormwater Pollution Prevention Plan (SWPPP), annual fee, and a signed certification statement. The PRDs are submitted electronically to the SWRCB via the Stormwater Multiple Application and Report Tracking System website.

Applicants must also demonstrate conformance with applicable best management practices (BMP) and prepare a SWPPP containing a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project site. The SWPPP must list BMPs that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for nonvisible pollutants if there is a failure of the BMPs, and a sediment-monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Some sites (Risk Level 2 and 3) also require implementation of a Rain Event Action Plan 48 hours prior to a 50 percent or greater chance of a precipitation event. In addition, Alameda County typically requires preparation of an Erosion and Sediment Control Plan, which may be included in the SWPPP for projects subject to the SWRCB Construction General Permit.

It should be noted that the Phase II Small MS4 Permit, under provision F.5.f.4, states that if a proposed development site has an existing document such as a hazardous materials business plan or spill prevention plan that includes required information, the project would not require a SWPPP. UC Berkeley controls 16 properties in urban areas that are required by law to develop a hazardous materials business plan. These properties include numerous diesel generators and other aboveground and underground tanks containing fuel, oil, and other oil-based substances such as vegetable oils and mineral oils, that are also subject to spill prevention, control, and countermeasure regulations.

State Water Resources Control Board Industrial General Permit

The Statewide General Permit for Stormwater Discharges Associated with Industrial Activities, Order No. 2014-0057-DWQ and amended by 2015-0122-DWQ (2018), regulates stormwater discharge for specific categories of industries identified by the Standard Industrial Classification Code. The permit requires that discharges comply with stringent standards for the protection of receiving waters, including the elimination of unauthorized nonstorm-water discharges, implementation of SWPPPs and BMPs, monitoring of stormwater runoff, and submittal of all compliance documents via the SWRCB's Stormwater Multiple Application and Report Tracking System. The cogeneration plant located in the Campus Park is covered

under the Industrial General Permit but it is operated under a No Exposure Coverage exemption. The facility is still required to inspect and submit an annual report.

State Water Resources Control Board Trash Amendments

On April 7, 2015, the SWRCB adopted an amendment to the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) to Control Trash and Part 1, Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (ISWEBE Plan). They are collectively referred to as “the Trash Amendments.” The Trash Amendments apply to all surface waters of California and include a land use–based compliance approach to focus trash controls on areas with high trash-generation rates. Areas such as high-density residential, industrial, commercial, mixed-use, and public transportation stations are considered “priority land uses.” There are two compliance tracks for Phase I and Phase II MS4 permittees:

- Track 1: Permittees must install, operate, and maintain a network of certified full capture systems in storm drains that capture runoff from priority land uses.
- Track 2: Permittees must implement a plan with a combination of full capture systems, multibenefit projects, institutional controls, and/or other treatment methods that have the same effectiveness as Track 1 methods.

The Trash Amendments provide a framework for permittees to implement their provisions. Permittees must achieve full compliance within 10 years of the permit and meet interim milestones, such as average load reductions of 10 percent per year.² In September 2017, UC Berkeley submitted a preliminary priority land use map to the SWRCB and a written intention to adhere to Track 2.³ UC Berkeley also developed a Trash Reduction Implementation Plan to meet the requirements of the Trash Amendments.

California Department of Fish and Wildlife

The CDFW is charged with protecting streams, water bodies, and riparian corridors through the streambed alteration agreement process under Sections 1601 to 1606 of the California Fish and Game Code. The Fish and Game Code stipulates that it is “unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake” without notifying the CDFW, incorporating necessary mitigation, and obtaining a streambed alteration agreement. CDFW’s jurisdiction extends to the top of banks and often includes the outer edge of riparian vegetation.

Sustainable Groundwater Management Act

The California Sustainable Groundwater Management Act (SGMA), a three-bill package signed into law in 2014, creates a framework for the management of groundwater sources throughout the state. Under SGMA, local agencies form groundwater sustainability agencies (GSA) and create groundwater sustainability

² State Water Resources Quality Control Board, January 7, 2019, Storm Water Program - Trash Implementation Program. https://www.waterboards.ca.gov/water_issues/programs/stormwater/trash_implementation.html, accessed December 22, 2020.

³ University of California Berkeley, December 1, 2018, Trash Reduction Implementation Plan.

plans (GSP). Timelines and requirements are based on basin priority. The eastern portion of the EIR Study Area is within a subbasin of the Santa Clara Valley basin identified by the San Francisco Bay RWQCB as the East Bay Plain. Under SGMA, the East Bay Plain subbasin is considered a medium-priority basin. SGMA requires medium- and high-priority basins to develop GSAs and GSPs and manage groundwater for long-term sustainability. The East Bay Plain subbasin is not critically overdrafted (i.e., the average annual amount of groundwater extracted does not exceed the average annual supply of water to the basin), and the East Bay Municipal Utility District (EBMUD) is the exclusive GSA.^{4,5} EBMUD is in the process of developing the East Bay Plain Subbasin GSP.⁶

University of California

UC Berkeley Water Action Plan

In 2012, the University of California (UC system) set sustainability goals applicable to all its campuses that include green building design, renewable energy, climate protection, sustainable transportation, recycling and waste management, sustainable food services, and sustainable water use. The UC systemwide goal for water use was to reduce potable water consumption at each campus (adjusted for population growth) by 20 percent by 2020. UC Berkeley reached this goal and is on track to meet the goal of a 36-percent reduction in water consumption by 2025. UC Berkeley developed a Water Action Plan that identifies current strategies for achieving sustainable water systems as part of the water conservation policy.⁷ Key conservation efforts reported in the Campus Sustainability Reports include interior retrofits with water-efficient technologies, education and behavioral change initiatives to change laundry habits, inventory and efficiency improvement of cooling towers, retrofit of 90 percent of the campus with smart irrigation controllers, and conversion of lawns to meadows.

UC Berkeley Environmental Enforcement Code

The Environmental Enforcement Code was adopted in 2018 for the purpose of enforcing federal, State, and local environmental rules and regulations on all properties owned, operated, or controlled by the UC California Regents and administered by UC Berkeley. The policy requires UC Berkeley to conduct investigations of environmental releases, and where appropriate, obtain technical or monitoring reports from any person suspected of causing an environmental release. The code is enforced by the University of California Police Department (UCPD) in consultation with the UC Berkeley Office of Environment, Health & Safety (EH&S). UCPD officers can issue citations, detain violators, or refer environmental criminal cases to the County District Attorney's Office, as appropriate.

⁴ Sustainable Groundwater Management Act, SGMA Data Viewer, <https://sgma.water.ca.gov/webgis?appid=SGMADataViewer#boundaries>, accessed August 24, 2020.

⁵ Department of Water Resources, 2020, 2-009.04 Santa Clara Valley, <https://sgma.water.ca.gov/portal/gsp/init/preview/24>, accessed August 25, 2020.

⁶ East Bay Municipal Utility District, 2020, Sustainable Groundwater Management, <https://www.ebmud.com/water/about-your-water/water-supply/groundwater-sustainability-agencies/>, accessed August 25, 2020.

⁷ University of California Berkeley, 2013, Berkeley Water Action Plan.

UC Berkeley Trash Reduction Implementation Plan

UC Berkeley's Trash Reduction Implementation Plan includes jurisdictional maps with MS4 drainage networks, trash generation areas, locations of proposed trash controls, and the level of trash generation. The plan also includes an implementation plan for Track 2 with rationale for how controls can achieve and demonstrate full capture system equivalency.⁸

Strawberry Creek Management Plan

The Strawberry Creek Restoration Program began in 1987 in response to UC Berkeley and community concerns over the deteriorated quality of Strawberry Creek. UC Berkeley EH&S office sponsored a comprehensive study of the creek, published in December 1987 as the Strawberry Creek Management Plan (SCMP). The SCMP provides recommendations for implementation of management strategies for point and nonpoint source pollution control, channel stabilization, aquatic and riparian habitat restoration, and watershed management.⁹

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues. Relevant sections of the Campus Design Standards include:

- Section 1 (General Requirements)
 - Section 01.57.13 – Temporary Erosion and Sediment Control
 - Section 01.57.19 – Temporary Environmental Controls
 - Section 01.57.23 – Temporary Storm Water Pollution Controls
- Section 31 (Earthwork)
 - Section 31.23.00 – Excavation and Fill – dewatering requirements
- Section 32 (Exterior Improvements)
 - Section 32.80.00 – Irrigation
- Section 33 (Utilities)
 - Section 33.10.00 – Water Utilities
 - Section 33.40.00 – Storm Drainage Utilities

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to hydrology and water quality as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through

⁸ University of California Berkeley, December 1, 2018, Trash Reduction Implementation Plan.

⁹ University of California, Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, 2005, State Clearinghouse Number 2003082131.

implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.9.3, Impact Discussion.

Regional

San Francisco Bay Regional Water Quality Control Board

UC Berkeley is within the jurisdiction of the San Francisco Bay RWQCB (Region 2), which addresses regionwide water quality issues through its Basin Plan. The Basin Plan was updated most recently in 2019 and designates beneficial uses of the state waters in Region 2; describes the water quality that must be maintained to support such uses; and provides programs, projects, and other actions necessary to achieve the standards established in the Basin Plan.¹⁰

East Bay Municipal Utility District Water Conservation Regulations

EBMUD will provide new or expanded water service to customers only when all applicable water-efficiency measures have been installed. Applicants requesting water service must supply plumbing and landscaping plans for review and approval from EBMUD's Water Conservation Division. For indoor water use, applicants must comply with the California Green Building Standards Code. For outdoor water use, applicants must submit landscape plans, irrigation plans and schedule, and water budget calculations, per EBMUD's Section 31, Water Efficiency Regulations.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the Cities of Berkeley and Oakland related to hydrology and water quality that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

¹⁰ San Francisco Bay RWQCB, 2019, Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin, https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/docs/BP_all_chapters.pdf, accessed on December 22, 2020.

City of Berkeley Requirements

For UC Berkeley projects that require the installation or destruction of groundwater monitoring wells, cathodic protection wells, water supply wells, or piezometers and borings used to collect groundwater, a subsurface drilling permit application must be submitted to the City of Berkeley, Toxics Management Division (TMD), by Capital Projects or EH&S. The City of Berkeley will issue a drilling permit and must be notified two days prior to the first day of drilling so that TMD can schedule an inspection of the drilling activities.

City of Oakland Standard Conditions of Approval

As a standard condition of approving development projects, the City of Oakland requires that project storm drainage systems be designed in accordance with its Storm Drainage Design Guidelines. To the maximum extent practicable, peak stormwater runoff from future project sites should be reduced by at least 25 percent compared to the preproject condition.

5.9.1.2 EXISTING CONDITIONS

LRDP Update

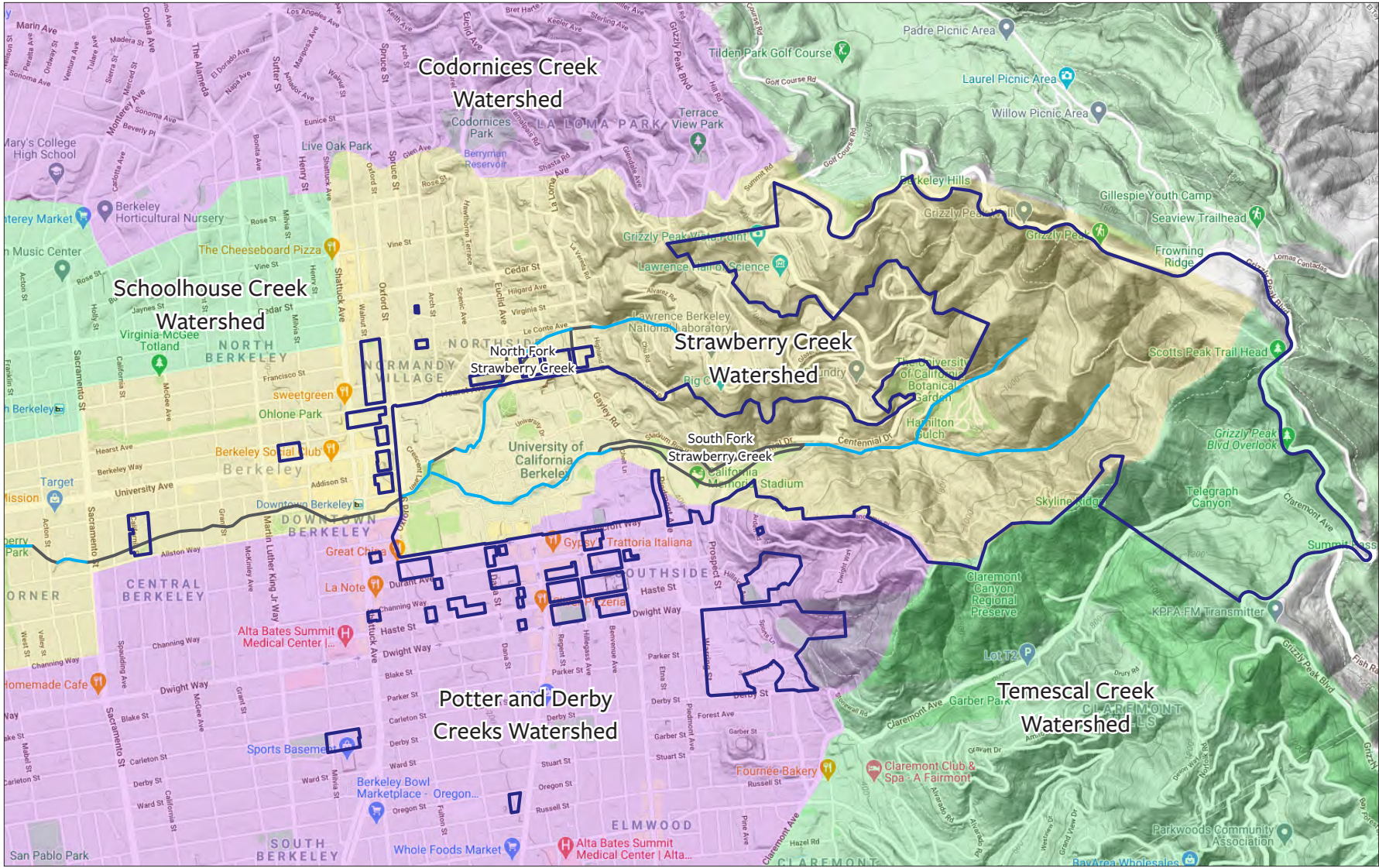
Watershed and Drainage Area

Most of the UC Berkeley campus lies within the Strawberry Creek watershed (see Figure 5.9-1, Watersheds in the EIR Study Area), which receives runoff from approximately 1,163 acres (1.6 square miles). The watershed is approximately 40 percent urbanized, and the remainder consists of undeveloped, largely natural wildlands. Approximately 800 acres of this watershed is under the jurisdiction of UC Berkeley, from the Hill Campus East at an elevation of 1,650 feet above mean sea level (msl), to the western edge of the Campus Park at Oxford Street at an elevation of 200 feet above msl. Stormwater runoff from the watershed enters the City's culvert at Oxford Street, which runs underground in a westerly direction and empties into San Francisco Bay near University Avenue.¹¹ The Campus Park, the Hill Campus West, and the Hill Campus East are in the Strawberry Creek watershed.

Increased urbanization around Strawberry Creek has resulted in an increase in peak flows, increased flooding potential, streambed degradation, bank erosion, and destruction of aquatic habitat through the release of chlorinated drinking water from broken and leaking pipes and various nonpoint source pollutants. Over the past 30 years, UC Berkeley has worked to restore the health and natural hydrology of the creek by implementing the SCMP.¹²

¹¹ University of California Berkeley, 2020, General Description of Strawberry Creek Watershed, <https://creeks.berkeley.edu/strawberry-creek-management-plan/31-general-description>, accessed on November 15, 2020.

¹² Sherwood Design Engineers, 2020, UC Berkeley LRDP and Campus Master Plan Memorandum, dated January 30, 2020.



Source: Alameda County Flood Control District, 2020.

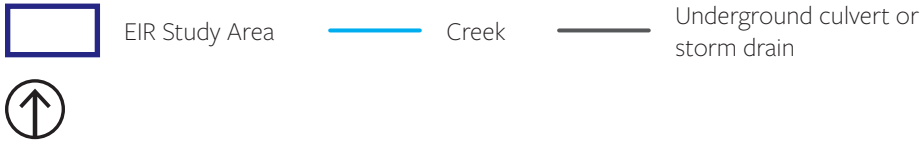


Figure 5.9-1
Watersheds in the EIR Study Area

The Clark Kerr Campus and parts of the City Environs Properties lie within the Potter and Derby Creeks watershed. This relatively small watershed of 3.8 square miles drains south Berkeley from the Berkeley hills to Aquatic Park and San Francisco Bay. As the population of Berkeley grew, Potter and Derby Creeks were culverted and today are almost entirely underground in constructed channels. A small portion of Derby Creek is visible to the north of the Clark Kerr Campus along the former Smythe- Fernwald site.

Although most of the Hill Campus East is in the Strawberry Creek watershed, the southern part is within the Temescal Creek watershed, which encompasses 6.7 square miles and extends from the north Oakland hills to San Francisco Bay at the Emeryville Crescent. Claremont (Harwood) Creek flows through the southern portion of the Hill Campus East and joins the main channel of Temescal Creek below Lake Temescal, at which point water flows primarily through culverts to the Emeryville Crescent State Marine Preserve.¹³

Surface Water

Strawberry Creek has two main branches, the North Fork and South Fork. The North Fork originates in the hills near Lawrence Berkeley National Laboratory and passes through the urbanized Berkeley Northside neighborhood before entering the Campus Park at University House. The headwaters of the South Fork and its tributaries originate in the Hill Campus East. The South Fork continues underground beneath California Memorial Stadium and returns to the surface north of the Women's Faculty Club. It joins the North Fork in the Eucalyptus Grove, and the main branch of Strawberry Creek continues to Oxford Street, where it enters a culvert and continues to flow largely underground but daylights in private backyards and at Strawberry Creek Park, which is one of the first urban creek daylighting projects; from Strawberry Creek Park creek water ultimately flows into San Francisco Bay.

Strawberry Creek provides important habitat for plant and animal wildlife within the UC Berkeley campus. It has been the focal point of educational activities for generations of UC Berkeley students, as well as elementary and high school students from surrounding communities. It serves as an outdoor laboratory for subjects such as environmental studies, biodiversity restoration, landscape design, engineering, and art. Implementation of the SCMP beginning in 1987 significantly improved water quality in Strawberry Creek, as evidenced by the successful reintroduction of local native fish species in 1989.¹⁴ The Strawberry Creek Environmental Quality Committee was created to assist in implementing restoration activities, including erosion control and bank stabilization, point source investigations, and public outreach; the committee continues to meet regularly.

Most of Derby Creek has been undergrounded and replaced by a rectangular storm drain network, but a very small stretch of the creek is visible just north of the of the Smythe-Fernwald site.. Claremont (Harwood) Creek drains the southeastern portion of the Hill Campus East and is one of three main tributaries of Temescal Creek.

¹³ Alameda County Flood Control and Conservation District, 2020, Temescal Creek Watershed, <https://acffloodcontrol.org/the-work-we-do/resources/temescal-creek-watershed/>, accessed on November 14, 2020.

¹⁴ University of California, Berkeley, 2020, Strawberry Creek Biological Resources – Flora and Fauna, 2008 Status Report.

Storm Drain System

UC Berkeley owns and operates its own stormwater system, which consists of drain inlets, catch basins, manholes, storm drainpipes, outlets to Strawberry Creek, and culverts along the creek. The stormwater system also includes green infrastructure features, such as detention ponds, vegetated bioswales, storage vaults, rain gardens, and green roofs. Strawberry Creek serves as a critical piece of stormwater infrastructure for the campus, acting as the discharge point and conveyance feature through the Campus Park.^{15, 16} Key features associated with the creek within the Campus Park and the Hill Campus East are summarized below:

- To manage flooding, an earthen detention basin was constructed within the Hill Campus East on the South Fork of Strawberry Creek at the entrance to the Lower Jordan fire road. The detention basin has a storage capacity of 1.5 million cubic feet. The basin outlet controls the rate of flow into Big Inch and Little Inch culverts via a hydraulically operated slide gate.
- The Little Inch culvert is a 30-inch bypass culvert constructed in 1923 to divert flow from the South Fork of Strawberry Creek beneath the UC Berkeley campus. The culvert runs beneath Memorial Stadium along the historical path of the creek and discharges to an open channel next to the Women's Faculty Club that ultimately connects to the outlet of the Big Inch culvert.
- The Big Inch culvert is a 60- to 72-inch bypass culvert that was constructed in 1951 to provide additional capacity for stormwater flows from the detention basin to the Campus Park. It roughly parallels the Little Inch drain and daylights adjacent to the Women's Faculty Club on the Campus Park.
- There is also a 34-inch culvert on the North Fork of Strawberry Creek within the Campus Park that runs under West Circle.¹⁷ The approximately 350-foot length of culvert surfaces in the Eucalyptus Grove/Grinnell Natural Area before it joins the South Fork of Strawberry Creek.
- Stormwater from the main portion of the Clark Kerr Campus is collected by UC Berkeley's internal storm drain network and eventually discharges to the City of Berkeley's storm drain system, which flows into the underground culverted Derby Creek. Approximately 4.3 acres of the easternmost portion of the Clark Kerr Campus is in Oakland. Currently, this area is natural, undeveloped terrain with informal trails and no stormwater infrastructure.
- Stormwater from the City Environs Properties north and west of the Campus Park is collected via curbs and gutters and delivered to Berkeley's storm drain system, which eventually discharges to the culverted portion of Strawberry Creek west of the Campus Park. Similarly, stormwater from the City Environs Properties south of the Campus Park is collected in curbs and gutters and catch basins for discharge into Berkeley's storm drain system, which eventually discharges to the culverted portion of Derby Creek.
- Stormwater from the Hill Campus East is mostly overland flow into natural ephemeral channels and is routed into either the North or South Fork of Strawberry Creek. However, the hardscape of Lawrence

¹⁵ Sherwood Design Engineers, January 30, 2020, Memorandum UC Berkeley LRDP and Campus Master Plan.

¹⁶ West Yost Associates, November 2015, UC Berkeley Campus Infrastructure Master Plan.

¹⁷ Sherwood Design Engineers, January 30, 2020, Memorandum UC Berkeley LRDP and Campus Master Plan.

Berkeley National Laboratory significantly affects the hydrology of the North Fork. The southeastern portion of the Hill Campus East discharges to Claremont (Harwood) Creek.

The City of Berkeley provides stormwater drainage to UC Berkeley's City Environs Properties and the portion of the Clark Kerr Campus in Berkeley. There are also areas along the edge of the Campus Park that drain away from the creek and into the City's storm drain system. Runoff from the City of Berkeley's storm drain system is eventually conveyed to the San Francisco Bay.

Sustainable Water Infrastructure

UC Berkeley is committed to incorporating low-impact development (LID) strategies and green infrastructure throughout its properties to reduce the impacts of impervious surfaces, enhance ecology, improve water quality, and reduce runoff. Some of the LIDS strategies that UC Berkeley has implemented include the following:

- **Grinnell, Wickson, and Goodspeed Natural Areas:** The Grinnell Natural Area was established by UC Berkeley in 1969 as a designated zone of protected native creekside vegetation. Creek bank stabilization and erosion reduction measures are part of this effort. This protection ensures that rainfall gradually seeps underground to the creek, which reduces flooding and filters pollutants out of the runoff. The Wickson and Goodspeed Natural Areas also feature some of these protective measures, such as the planting of native species to retain banks and directing stormwater flows off hardscape areas into the natural areas for infiltration and groundwater recharge.
- **Stormwater Detention Pond:** A bio-filtration system is installed upstream of the Grinnell Natural Area that prevents contaminated runoff from flowing into the creek. The system collects runoff from the Dwinelle parking lot. Stormwater is spread across a large lawn downhill of the parking lot. Excess water flows into the stormwater detention pond, which is planted with native shrubs that are adapted to wet conditions in the rainy season and dry conditions in the summer. These modifications enhance water quality and mitigate peak runoff into Strawberry Creek.
- **Wellman Parking Lot:** The Wellman parking lot consists of interlocking pavers that allow rainwater to soak into an underground gravel filtration system. The parking lot lessens the possibility of flooding in and around Strawberry Creek, recharges the water table, and filters out pollutants that would otherwise harm the creek ecosystem.
- **Permeable Areas:** Bicycle parking areas around campus have been resurfaced with permeable materials, such as decomposed granite and mulch, to allow stormwater to percolate into the ground and reduce runoff to Strawberry Creek.
- **Smart Irrigation:** UC Berkeley reduces irrigation runoff to the creek by using smart irrigation technology that prevents overwatering. Approximately 90 percent of the sprinklers on campus are currently controlled by smart irrigation systems, and more installations are planned in the future.
- **Stormwater Catchment Gardens:** Runoff from the roof of the Blum Center is directed into a series of stormwater catchment gardens in front of the building. These gardens, which are landscaped with native plants, are fully irrigated by the water that runs off the roof in rainstorms. The gardens reduce the risk of flooding around Strawberry Creek and improve water quality. A similar garden exists near the Hearst Gym on the southeast side of the Campus Park. These are some of the first installations in a plan to include more stormwater catchment gardens around campus.

- **Vegetated Bioswale:** A vegetated bioswale is installed behind the stormwater catchment garden at the Blum Center. The bioswale is a landscaped feature designed to use plants and porous soil materials to catch and store runoff and filter out pollutants. In the case of a major rainstorm, the excess water will flow into an overflow drain.
- **Green Roofs:** Green roofs were installed on the Engineering Library and the Li Ka Shing building to improve water quality by catching and absorbing airborne pollutants that would otherwise inevitably wash into the creek. The roofs also deter flooding by absorbing rainwater instead of funneling it into gutters and storm drains. The green roof on the Li Ka Shing building, located on the western edge of the Campus Park, is planted with native succulents that create a vibrant ecosystem for migrating butterflies and bees.
- **Redwood Crib Wall:** A redwood retaining wall, also known as a crib wall, was installed in a section of Strawberry Creek in 1999. The crib wall provides an effective solution to bank stabilization and protection while providing habitat for native plants and animal species. The crib wall is designed so that vegetation grows over an interlocking structure of redwood logs. As the logs decompose over time, the roots from the vegetation will spread throughout the logs, locking the bank into place and creating a sustainable solution to erosion of the creek channel. The redwood crib wall is considered stronger and longer lasting than traditional retaining walls built out of concrete.
- **Memorial Stadium:** The Memorial Stadium drainage system was rebuilt in 2012 to include a mechanical stormwater filtration system to separate trash, sediment, and other pollutants from stormwater before the water is released to the creek. The stormwater separation machinery is housed 10 feet under the parking lot north of the stadium.¹⁸
- **Rainwater Harvesting:** Various rainwater harvesting systems have been installed within the Campus Park, including a 24,000-gallon system at the Law Building. Eshleman Hall and Chou Hall also have stormwater capture and reuse systems. Engineers for a Sustainable World, an undergraduate club, installed a 2,000-gallon rainwater harvesting tank on Hearst Annex Field in 2018 to irrigate 8,208 square feet of lawn.

UC Berkeley is committed to implementing a comprehensive stormwater approach that will allow for campuswide compliance with the Phase II NPDES permit requirements for post-construction stormwater management.¹⁹ Continued implementation of decentralized green infrastructure will provide water quality improvements, retention, detention, and mitigation of peak flows, which will preserve and enhance Strawberry Creek, meet stormwater permit requirements, and alleviate flooding risk. UC Berkeley also intends to implement a campuswide credit system that focuses on major high-impact stormwater improvements rather than smaller, lower-impact projects that occur on an incremental building project basis. In addition, UC Berkeley plans to incorporate restoration projects along Strawberry Creek to improve conveyance, reduce erosion, create pool habitat, and reduce the potential for flooding.

¹⁸ University of California Berkeley, Sustainable Water Infrastructure Tour, https://sustainability.berkeley.edu/sites/default/files/UCBerkeley_SustainableWaterTourbooklet_o614.pdf, accessed September 3, 2020.

¹⁹ Sherwood Design Engineers, 4,00 30, 2020, Memorandum UC Berkeley LRDP and Campus Master Plan.

Groundwater

The western portion of the EIR Study Area falls within the East Bay Plain subbasin, which is part of the larger Santa Clara Valley Groundwater Basin.²⁰ The East Bay Plain is considered a medium-priority basin and is not critically overdrafted, that is, the groundwater demand does not exceed the basin's sustainable recharge. EBMUD serves as the GSA for the East Bay Plain Basin and is in the process of developing the East Bay Plain Subbasin GSP.

The East Bay Plain is a northwest-trending alluvial plain bounded on the north by San Pablo Bay, on the east by the Hayward Fault, on the south by the Niles Cone Groundwater Basin, and on the west it extends beneath San Francisco Bay.²¹

The East Bay Plain Subbasin includes a confined, deep aquifer in the southern half of the subbasin. The deep aquifer thins out to the north and becomes an insignificant source of groundwater as it approaches an area just south of downtown Oakland. The confined, deep aquifer is not found in the remaining parts of the East Bay Plain Subbasin; however, areas to the far north, within the corporate limits of Richmond and San Pablo, have aquifers that are capable of producing water in quantities sufficient to serve the irrigation needs of schools, parks, and a local golf course. The remaining portion of the East Bay Plain Subbasin has shallow aquifers that cannot serve as a significant source of groundwater.²²

EBMUD has completed Phase 1 of the Bayside Groundwater Project, which includes a 600-foot-deep injection/extraction well, a water treatment plant, and distribution pipelines. This project will provide a source of supplemental water supply during dry years. Potable drinking water will be injected into the deep aquifer during wet years, and during times of drought, the stored water will be extracted, treated to meet federal and State drinking water standards, and distributed to customers.²³ There are two groundwater wells on the Campus Park within the Grinnell Natural Area. One well is currently active and equipped with a pump and discharge point. This active well is located along Strawberry Creek and is housed in a corrugated steel shed located on the creek bank adjacent to Frank Schlessinger Way. The groundwater from this well is used to fill the tanks of UC Berkeley's surface washing rigs because it does not contain chloramines and therefore is not toxic to aquatic life if it runs off to adjacent creeks.

Shallow groundwater in the EIR Study Area ranges from 5 to 50 feet below ground surface.²⁴ Groundwater levels for the various campus areas are provided in Table 5.6-2, Groundwater Depths, of Chapter 5.6, Geology and Soils, of this Draft EIR. Future proposed LRDP Update projects that involve subterranean

²⁰ Sustainable Groundwater Management Act, SGMA Data Viewer, <https://sgma.water.ca.gov/webgis?appid=SGMADataViewer#boundaries>, accessed August 24, 2020.

²¹ Department of Water Resources, 2004, Bulletin 118 Santa Clara Valley Groundwater Basin, East Bay Plain Subbasin, https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/2_009_04_East-BayPlainSubbasin.pdf, accessed August 25, 2020.

²² East Bay Municipal Utility District, July 2016, 2015 Urban Water Management Plan, [file:///C:/Users/delchammas/Downloads/UWMP-2015-BOOK-FINALweb_secure%20\(9\).pdf](file:///C:/Users/delchammas/Downloads/UWMP-2015-BOOK-FINALweb_secure%20(9).pdf), accessed August 25, 2020.

²³ East Bay Municipal Utility District, 2016, 2015 Urban Water Management Plan.

²⁴ Alan Kropp & Associates, 2020, Existing Setting, Geologic Hazards, UC Berkeley – LRDP Update EIR, Berkeley, California, dated September 2020, prepared by Alan Kropp & Associates.

parking or floors below the ground surface may require construction dewatering, which would require coordination with the UC Berkeley EH&S office.

Water Quality

Surface Water Quality

Surface water quality is affected by point source and nonpoint source pollutants. Point source pollutants are those emitted at a specific point, such as a pipe, and nonpoint source pollutants are typically generated by surface runoff from diffuse sources, such as streets, paved areas, and landscaped areas. Point source pollutants are controlled with pollutant discharge regulations or waste discharge requirements. Nonpoint source pollutants are more difficult to monitor and control, although they are important contributors to surface water quality in urban areas.

Stormwater runoff pollutants vary based on land use, topography, the amount of impervious surface, and the amount and frequency of rainfall and irrigation practices. Runoff in developed areas typically contains oil, grease, and metals accumulated in streets, driveways, parking lots, and rooftops as well as pesticides, herbicides, particulate matter, nutrients, animal waste, and other oxygen-demanding substances from landscaped areas. The highest pollutant concentrations usually occur at the beginning of the wet season during the “first flush,” when early rainfall flushes out pollutants that have accumulated on hardscape surfaces during the dry months.

The San Francisco Bay RWQCB monitors surface water quality through implementation of the Basin Plan and designates beneficial uses for surface water bodies and groundwater. Existing beneficial uses of Strawberry Creek and Claremont Creek include wildlife habitat, warm freshwater habitat, and contact/noncontact water recreation. Derby Creek is not listed in the Basin Plan as having beneficial uses. Existing beneficial uses for the East Bay Plain groundwater basin include municipal and domestic water supply, industrial process supply, industrial service supply, and agricultural water supply.²⁵

In accordance with Section 303(d) of the CWA, the State must present the California Environmental Protection Agency with a list of impaired water bodies that do not meet water quality standards. The impaired water body that the EIR Study Area directly discharges to is Strawberry Creek, and the pollutant of concern is trash.

Once a water body has been placed on the 303(d) list of impaired waters, states are required to develop a TMDL threshold to address each pollutant causing impairment. A TMDL defines how much of a pollutant a water body can tolerate and still meet water quality standards. A TMDL for trash for Strawberry Creek is expected to be approved in 2021.²⁶

²⁵ State Water Resources Control Board, 2020, San Francisco Bay Region, Beneficial Uses, https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/bp_ch2.html#2.2.1, accessed August 24, 2020.

²⁶ State Water Resource Control Board, 2020, Impaired Waters, https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2012.shtml, accessed August 25, 2020.

Groundwater Quality

There are two groundwater supply wells in the EIR Study Area, and one well is currently active. However, groundwater usage is very limited, used to fill UC Berkeley's surface washing rigs. EBMUD does not currently extract groundwater as a source of its municipal supply. However, EBMUD has completed Phase 1 of the Bayside Groundwater Project, where surface water would be injected into a deep aquifer well near San Leandro and banked during wet years, then pumped out of the ground, treated, and distributed to customers during drought years. The shallow aquifer is typically high in total dissolved solids, and there have been plumes of shallow groundwater contamination in the East Bay Plain Subbasin reported by the San Francisco RWQCB.²⁷ There currently are no active groundwater remediation cases on the UC Berkeley campus. There is a groundwater plume beneath Lawrence Berkeley National Laboratory that is being remediated and monitored; however, contaminants are not migrating off-site.²⁸

Flood Zones

FEMA determines floodplain zones to assist cities in mitigating flooding hazards through land use planning. FEMA also outlines specific regulations for any construction within a 100-year floodplain. The 100-year floodplain is defined as an area that has a 1 percent chance of flooding in a given year. FEMA also prepares maps for 500-year floods, which means that in any given year, the risk of flooding in the designated area is 0.2 percent.

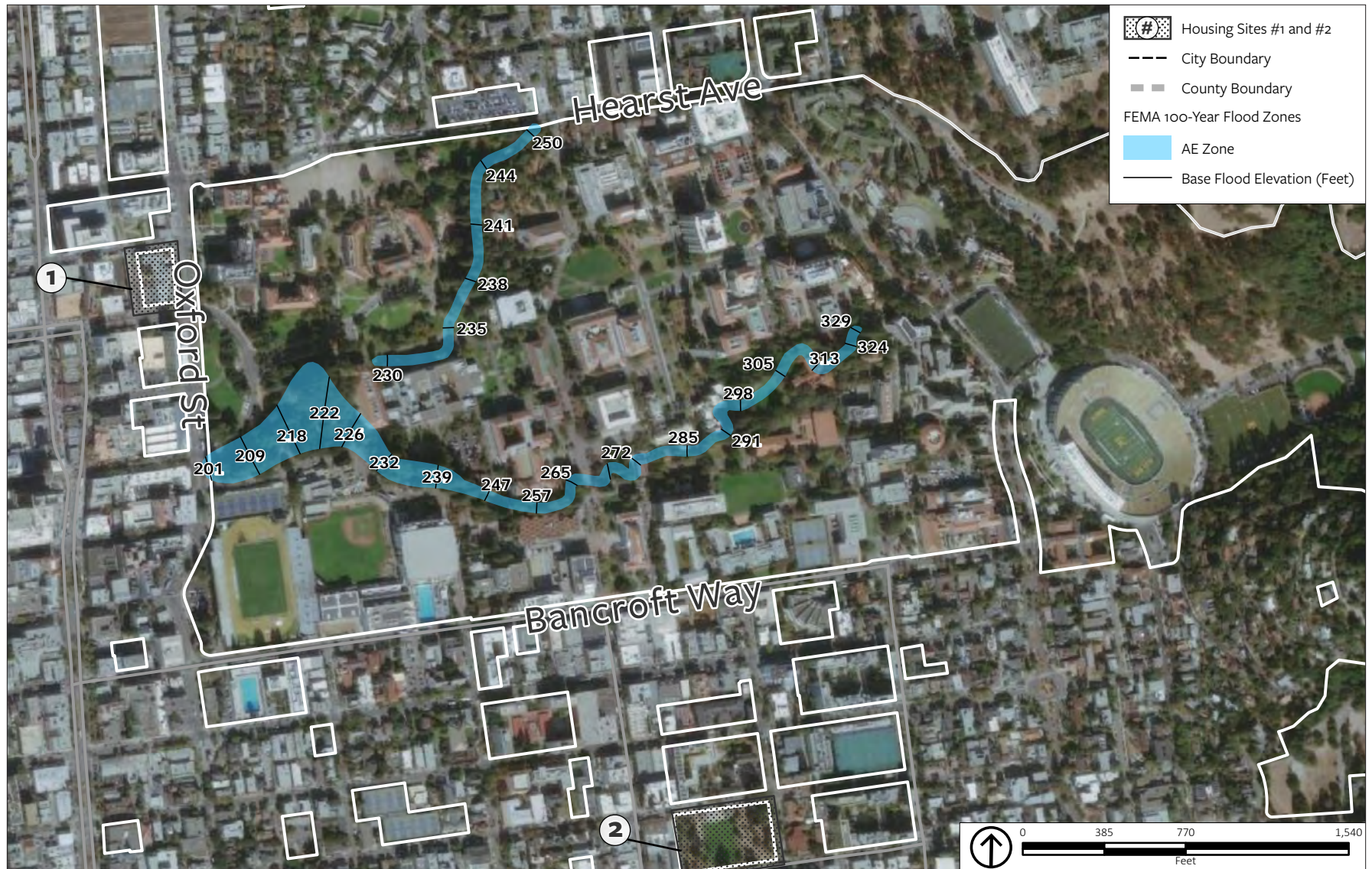
In some locations, FEMA also provides measurements of base flood elevations for the 100-year flood, which is the minimum height of the flood waters during a 100-year event. Base flood elevation is reported in feet above sea level. Depth of flooding is determined by subtracting the land's height above sea level from the base flood elevation. Areas within the 100-year flood hazard area that are financed by federally backed mortgages are subject to mandatory federal insurance requirements and building standards to reduce flood damage.

A map of the EIR Study Area locations that are within 100-year floodplains is provided as Figure 5.9-2, FEMA 100-Year Floodplain Map. The 100-year flood zone is also known as a Special Flood Hazard Area. Zone AE is defined as an area subject to inundation by the 100-year flood event where base flood elevations have been calculated. As shown on Figure 5.9-2, the areas immediately adjacent to the North and South Forks of Strawberry Creek and the Grinnell Natural Area, where the two forks join, are within the 100-year floodplain and subject to overflow during storm events. All other locations in the EIR Study Area are designated Zone X, which means they are outside of the 500-year flood zone.²⁹

²⁷ Department of Water Resources, 2004, Bulletin 118 Santa Clara Valley Groundwater Basin, East Bay Plain Subbasin, https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/2_009_04_East-BayPlainSubbasin.pdf, accessed August 25, 2020.

²⁸ California Department of Toxic Substances Control, 2020, Lawrence Berkeley National Laboratory (80001259), https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=80001259#permitting, accessed September 1, 2020.

²⁹ Federal Emergency Management Agency, Various FIRM Maps Including 06001C0057G, 06001C0019G, 06001C0038G, and 06001C0080G, <http://msc.fema.gov/portal>, accessed August 25, 2020.



Source: ABAG/MTC, 2017; Alameda County, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

AE flood zones are areas that present a 1% annual chance of flooding (opens in new window) and a 26% chance over the life of a 30-year mortgage, according to FEMA.

FEMA: Federal Emergency Management Agency

Figure 5.9-2
FEMA 100-Year Floodplain Map

Dam Inundation Zones

There are no dam inundation zones in the EIR Study Area. The closest dam to UC Berkeley is the former Berryman Reservoir, which is approximately 0.62-mile northeast of the EIR Study Area. However, because of concerns about earthquake faults beneath the site, it was drained and replaced with a 2.3-million-gallon earthquake-resistant steel tank in 2013. The nearest operating dam is Tilden Park Dam, which is approximately 0.9 mile north of the EIR Study Area. However, the dam inundation zone flows north along Wildcat Creek and away from the EIR Study Area.³⁰

Tsunami

A tsunami is a series of traveling ocean waves generated by rare, catastrophic events, such as earthquakes, submarine landslides, and subsurface volcanic eruptions. Tsunamis can travel over the ocean surface at speeds of 400 to 500 miles per hour, and wave heights at the shore can range from inches to 50 feet. The EIR Study Area is located more than 2.4 miles inland from San Francisco Bay and, according to the Tsunami Inundation Map, is not within the mapped tsunami inundation zone.³¹ Therefore, there is no risk of flooding from a tsunami.

Seiche

A seiche is an oscillation wave generated in a closed or partially closed body of water, which can be compared to the back-and-forth sloshing in a bathtub. Seiches can be caused by winds, changes in atmospheric pressure, underwater earthquakes, tsunamis, or landslides into the water body. Bodies of water such as bays, harbors, reservoirs, ponds, and swimming pools can experience seiche waves up to several feet in height during a strong earthquake.

There are no large bodies of water or large water storage tanks in the EIR Study Area that could trigger a seiche. Since there are no dam inundation zones within the EIR Study Area, there is no possibility of seiches from nearby dams reaching the EIR Study Area. Therefore, there is no risk of a seiche impacting the EIR Study Area.

Housing Project #1

The Housing Project #1 project site is a rectangular 0.92-acre site that is fully developed and located in a highly urbanized area of the City Environs Properties (see Figure 3-7, Housing Project #1 Site Aerial, in Chapter 3, Project Description, of this Draft EIR). The natural topography of the project site is flat. The site is currently occupied by surface parking, UC Berkeley office space, apartments, the UC Berkeley shuttle

³⁰ California Division of Safety of Dam, 2020, California Dam Breach Inundation Maps, https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2, accessed August 25, 2020.

³¹ California Governor's Office of Emergency Services, August 12, 2019, Tsunami Inundation Zones, <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=4d56b41ba6c64d538ec3a91d40078dff>, accessed August 25, 2020.

maintenance garage, and a vacant commercial building. The proposed project would include ground-floor campus life facilities, commercial space, and private student housing on the upper floors of the building.

Groundwater beneath the site was encountered at depths of 5.5 to 10.5 feet below ground surface.³² Therefore, construction dewatering would be required with the construction of two below-grade floors. Because soil and groundwater contamination were reported at the site from the operation of two former gasoline stations with a total of seven tanks, a permit must be obtained from EBMUD, and testing must be conducted prior to the discharge of construction dewatering operations. According to UC Berkeley's Campus Design Standards, the project contractor must submit a dewatering plan prior to the start of construction that includes the plans, method, and equipment used for dewatering; a monitoring plan to determine drawdown impacts to adjacent structures, landscaping, and water courses; and how the extracted water will be disposed. The water disposal must be in accordance with applicable State and local regulations. The dewatering plan must be approved by EH&S and Facilities Services prior to the start of construction.

Stormwater drainage from the project site would be directed to the City of Berkeley's storm drain system via a catch basin at the corner of the intersection of Walnut Street and University Avenue. The project site will include on-site or off-site stormwater treatment. The exact configuration and location of these stormwater treatment methods and overall strategy will be determined with the submittal of the final plans. A Preliminary Stormwater Management Plan has been prepared by BKF Engineers.³³ Alternatively, if the stormwater credit program is approved by the RWQCB before the start of the project, centralized stormwater management facilities that exceed the MS4 requirements may be installed in lieu of the on-site stormwater treatment measures.

As shown on Figure 5.9-2, FEMA 100-year Floodplain Map, the Housing Project #1 site is not within a 100-year floodplain zone. The site is also not at risk for inundation from a dam, tsunami, or seiche.

Housing Project #2

The Housing Project #2 site is in the City Environs Properties on the site currently known as People's Park (see Figure 3-14, Housing Project #2 Site Aerial, in Chapter 3, Project Description, of this Draft EIR). The site is a rectangular 2.8-acre property that is developed in a highly urbanized area. The site has a 20-foot grade change from east to west in a constant slope. Current amenities on-site include demonstration gardens, lawn space, a paved basketball court, a picnic area, a small wooden stage, and a public restroom building. Trees are located throughout the site, primarily on the western and eastern edges, with open space in the middle. The proposed project would consist of a student housing building, a separate affordable and supportive housing building, and public open space. It is anticipated that over 50 percent of the project site

³² Langan Engineering and Environmental Services, Inc, 2020, Soil and Groundwater Management Plan, Helen Diller Anchor House, University Avenue and Walnut Street, Berkeley, California, dated September 17, 2020.

³³ BKF Engineers, 2020, University of California Berkeley Helen Diller Anchor House, Civil Engineering Drawings, dated March 20, 2020.

would be devoted to open space, landscaping, hardscape, and the incorporation of a commemorative program.

The current project design will include green infrastructure and stormwater retention areas throughout the site. Planted bioswales would capture runoff from the Central Glade area and drain it into a bioretention facility. Similar bioretention facilities would be installed along the southwest corner of the student housing building's west wing. Bioretention features are also proposed along the western and southern edges of the project site. Additional features include flow-through planters, rain gardens, vegetated roof trays, and permeable pavements installed at paths and hardscapes.³⁴ Alternatively, if the stormwater credit program is approved by the RWQCB before the start of the project, centralized stormwater management facilities that exceed the MS4 requirements may be installed in lieu of the on-site stormwater treatment measures.

Excess stormwater would be collected via on-site 12-inch storm drain laterals and conveyed to the City of Berkeley's storm drain system. There is a catch basin at the intersection of Dwight Way and Bowditch Street that connects to a 36-inch City of Berkeley storm drain, and there are catch basins in Haste Street that connect to an existing 10-inch City storm drain.³⁵

Figure 5.9-2, FEMA 100-year Floodplain Map, shows that the Housing Project #2 site is not in a 100-year flood plain, and the site is not at risk of inundation from a dam, tsunami, or seiche.

5.9.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant hydrology and water quality impact if it would:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
 - a. Result in a substantial erosion or siltation on- or off-site;
 - b. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
 - c. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
 - d. Impede or redirect flood flows.
4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

³⁴ University of California, Berkeley, 2020, People's Park Housing Project: Detailed Project Program, dated June 1, 2020.

³⁵ University of California, Berkeley, 2020, People's Park Housing Project: Detailed Project Program, dated June 1, 2020.

- 5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.
- 6. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.9.3 IMPACT DISCUSSION

HYD-1	The proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.
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LRDP Update

Proposed buildout of the proposed LRDP Update would involve soil disturbance, construction, and operation of developed land uses that could generate pollutants affecting stormwater.

Discharges from Construction Sites to Stormwater

Clearing, grading, excavation, and construction activities associated with the proposed project have the potential to impact water quality through soil erosion and by increasing the amount of silt and debris carried in runoff. Additionally, the use of construction materials such as fuels, solvents, and paints, may present a risk to surface water quality. Finally, the refueling and parking of construction vehicles and other equipment on-site during construction may result in oil, grease, or related pollutant leaks and spills that may discharge into the storm drain system.

To minimize these potential impacts, future development and redevelopment pursuant to the proposed project would require compliance with the Construction General Permit Water Quality Order 2009-0009-DWQ (as amended by Order No. 2010-0014-DWQ and 2012-006-DWQ), which includes the preparation and implementation of a SWPPP. A SWPPP requires the incorporation of BMPs to control sediment, erosion, and hazardous materials contamination of runoff during construction and prevent contaminants from reaching receiving water bodies. The SWRCB mandates that projects that disturb one or more acres of land must obtain coverage under the Statewide Construction General Permit. The Construction General Permit also requires that prior to the start of construction activities, the project applicant must file PRDs with the SWRCB, which includes a notice of intent, risk assessment, site map, annual fee, signed certification statement, SWPPP, and post-construction water balance calculations. The construction contractor is required to maintain a copy of the SWPPP at the site and implement all construction BMPs identified in the SWPPP during construction activities. Prior to the issuance of a grading permit, the project applicant is required to provide proof of filing of the PRDs with the SWRCB. Categories of potential BMPs that would be implemented for this project are described in Table 5.9-1, Construction Best Management Practices.

TABLE 5.9-1 CONSTRUCTION BEST MANAGEMENT PRACTICES

Category	Purpose	Examples
Erosion Controls and Wind Erosion Controls	<ul style="list-style-type: none"> Use project scheduling and planning to reduce soil or vegetation disturbance (particularly during the rainy season) Prevent or reduce erosion potential by diverting or controlling drainage Prepare and stabilize disturbed soil areas 	Scheduling, preservation of existing vegetation, hydraulic mulch, hydroseeding, soil binders, straw mulch, geotextile and mats, wood mulching, earth dikes and drainage swales, velocity dissipation devices, slope drains, streambank stabilization, compost blankets, soil preparation/roughening, and non-vegetative stabilization
Sediment Controls	<ul style="list-style-type: none"> Prevent the mobilization of soil particles through the use of tarping, matting, or other covers. 	Silt fence, sediment basin, sediment trap, check dam, fiber rolls, gravel bag berm, street sweeping and vacuuming, sandbag barrier, straw bale barrier, storm drain inlet protection, manufactured linear sediment controls, compost socks and berms, and biofilter bags
Wind Erosion Controls	<ul style="list-style-type: none"> Apply water or other dust palliatives to prevent or minimize dust nuisance 	Dust control soil binders, chemical dust suppressants, covering stockpiles, permanent vegetation, mulching, watering, temporary gravel construction, synthetic covers, and minimization of disturbed area
Tracking Controls	<ul style="list-style-type: none"> Minimize the tracking of soil offsite by vehicles 	Stabilized construction roadways and construction entrances/exits, and entrance/outlet tire wash
Non-stormwater Management Controls	<ul style="list-style-type: none"> Prohibit discharge of materials other than stormwater, such as discharges from the cleaning, maintenance, and fueling of vehicles and equipment Conduct various construction operations, including paving, grinding, and concrete curing and finishing, in ways that minimize non-stormwater discharges and contamination of any such discharges 	Water conservation practices, temporary stream crossings, clear water diversions, illicit connection/discharge, potable and irrigation water management, and the proper management of the following operations: paving and grinding, dewatering, vehicle and equipment cleaning, fueling and maintenance, pile driving, concrete curing, concrete finishing, demolition adjacent to water, material over water, and temporary batch plants
Waste Management and Controls (i.e., good housekeeping practices)	<ul style="list-style-type: none"> Manage materials and wastes to avoid contamination of stormwater 	Stockpile management, spill prevention and control, solid waste management, hazardous waste management, contaminated soil management, concrete waste management, sanitary/septic waste management, liquid waste management, and management of material delivery storage and use

Source: Compiled by PlaceWorks from information provided in the California Stormwater Quality Association's (CASQA's Construction BMP Handbook).

Submittal of the PRDs and implementation of the SWPPP throughout the construction phase of development and redevelopment pursuant to the proposed LRDP Update would address anticipated and expected pollutants of concern from construction activities. Furthermore, during the construction monitoring phase, EH&S or an approved third party would verify that development and redevelopment pursuant to the proposed LRDP Update complies with all applicable requirements and BMPs. As a result, water quality impacts associated with construction activities would be *less than significant*.

Operational Impacts

Development and redevelopment in the proposed LRDP Update, including additional academic, research, support, and housing uses, would be similar to existing UC Berkeley land uses. Therefore, the stormwater and wastewater quality of these discharges is not expected to change significantly. However, drainage patterns can be altered and there may be an increase in impervious surfaces, creating changes to stormwater flows with the potential to impact water quality.

All new development and redevelopment projects must comply with the requirements of the Phase II Small MS4 permit (Order No. 2013-0001-DWQ) and incorporate LID/site design and BMPs to address post-construction stormwater runoff to meet waste discharge requirements. Typically, small projects that create and/or replace 2,500 to 5,000 square feet of impervious surfaces are required to implement site design measures to reduce runoff, such as tree planting, rooftop and impervious areas draining to pervious areas, porous pavement, vegetated swales, green roofs, and stream setbacks and buffers. Regulated projects that create and/or replace 5,000 square feet or more of impervious surfaces are required to use site design, source control, and stormwater treatment measures. The stormwater treatment facilities must be designed to infiltrate, evapotranspire, harvest/reuse, or biotreat stormwater from the 85th percentile 24-hour storm or the flow of runoff from a rainfall event equal to at least 0.2 inches per hour.

To reduce the piecemeal approach of small stormwater treatment facilities scattered throughout the campus, UC Berkeley is currently in discussions with the RWQCB to implement centralized stormwater management facilities designed to manage stormwater from larger upstream watersheds that would exceed the requirements of a specific development project and maintain the UC Berkeley's commitment to no net new increase of stormwater flow from new development projects. These centralized facilities would provide "stormwater credits" for development projects that are constrained in implementing on-site stormwater facilities due to space limitations or slope. In addition, this would provide environmental benefits, such as improved flood and drought resilience, landscape integration, living laboratory opportunities for students and staff, and enhanced mobility corridors. One option is to track stormwater credit collectively for all UC Berkeley properties within Strawberry Creek and Potter/Derby watersheds, including the Campus Park, the Clark Kerr Campus, and UC Berkeley-controlled parcels in the city of Berkeley. For example, the West Oval Glade project, described below, could provide the equivalent of 15,000 square feet of biotreatment area, which is equivalent to 56 percent of the total treatment area required for future Campus Park development, or about 20 percent of the treatment area required for the full proposed LRDP Update buildout scenario.

UC Berkeley has also proposed several green infrastructure projects in the Campus Park to improve water quality:³⁶

- **West Oval Glade and West Circle.** This area would be renovated so that stormwater from the upstream 10-acre watershed would be diverted to a water quality channel that connects to the North Fork of Strawberry Creek. There also are plans to daylight the creek with the removal of the West Circle

³⁶ Sherwood Design Engineers, 2020, UC Berkeley Resilient Water Plan: Stormwater and Green Infrastructure Framework and Catalytic Projects, dated September 29, 2020.

roundabout and replace the existing culvert with an arched culvert that allows for pedestrian and service vehicle access across the creek. This would also alleviate flooding issues at the culvert. These proposed improvements provide opportunities for passive recreation and aquatic habitat development while maintaining the historic character of the area.

- **North Fork of Strawberry Creek.** UC Berkeley is evaluating water quality diversion and treatment measures where Strawberry Creek enters the northern edge of the Campus Park at University House.
- **Chem Green.** This project would incorporate stormwater management, water quality and retention along the east side of Lewis Hall and would direct runoff into the Strawberry Creek culvert.
- **Data Hub.** This project would direct stormwater runoff from the new building to Strawberry Creek after treatment rather than to the City's storm drain system. Tree well filters, or potentially, off-project treatment methods, would treat the stormwater and hydrate soils along a north-south green corridor.
- **Mulford Lawn.** This area would serve as a stormwater retention pond for an upstream 4.5-acre watershed and result in improvements in water quality prior to discharge to Strawberry Creek.
- **Wheeler Glade.** This project would create a new open space next to Strawberry Creek upstream from Sather Bridge and includes a landscaping project. As now envisioned, this project would include the removal of the Sproul Hall parking lot and the Architects & Engineers building, the installation of contoured seat walls on the north slope of the creek, the selective removal of trees to open views, the creation of a shallow pond in the former parking lot that doubles as stormwater retention, and the installation of a new lawn on the south slope with a biofiltration system at the water's edge to protect the creek.

UC Berkeley EH&S and Facilities Services also consider potential impacts to surface water, groundwater, and wastewater as a standard part of the project development and plan check review process. The review process may include evaluation of dewatering activities, possible pollutants generated by the project, and general compliance with the MS4 permit requirements. EH&S developed a post-construction stormwater management checklist designed to guide planners, project managers, and inspectors through the requirements of the MS4 permit. In addition to providing guidance, part of the purpose of the checklist is to make sure that construction projects include required documentation for regulatory compliance. In the Final Inspection portion of the checklist, projects must submit to EH&S written documentation determining who is responsible for operations and maintenance of any stormwater treatment systems, and an operations and maintenance manual if required by stormwater treatment type. EH&S requests the results of inspections, maintenance, and corrective actions on MS4-mandated stormwater facilities. In addition, before the start of each rainy season, EH&S sends a list of installed facilities to the Alameda County Vector Control Services and the RWQCB. The proposed LRDP Update includes the adoption of goals and principles, as listed in Chapter 3, Project Description, that address water quality.

As part of the proposed project, UC Berkeley and future development projects would implement the hydrology and water quality (HYD) CBPs listed here. This list identifies the CBPs that have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP HYD-1:** During the plan check review process and construction phase monitoring, UC Berkeley Office of Environment, Health & Safety will review each development project to determine whether project runoff would increase pollutant loading and verify that the proposed project complies with all

applicable requirements (e.g., Regional Water Quality Control Board and Campus Design Standards requirements) and best management practices (e.g., those described in the California Stormwater Quality Association's Construction BMP Handbook).

- **CBP HYD-2 (Updated):** UC Berkeley will continue implementing an urban runoff management program containing best management practices, as published in the Strawberry Creek Management Plan, and as developed through the Stormwater Permit Annual Reports completed for the Phase II municipal separate storm sewer system (MS4) permit. UC Berkeley will continue to comply with the MS4 stormwater permitting requirements by implementing construction and post-construction control measures and best management practices required by project-specific Stormwater Pollution Prevention Plans (SWPPPs) and by the Phase II MS4 permit to control pollution. SWPPPs will be prepared by the project contractor as required to prevent discharge of pollutants and to minimize sedimentation resulting from construction and the transport of soils by construction vehicles.
- **CBP HYD-3:** UC Berkeley will maintain a campuswide educational program regarding safe use and disposal of facilities maintenance chemicals and laboratory chemicals to prevent the discharge of these pollutants to Strawberry Creek and campus storm drains.
- **CBP HYD-4:** Where feasible, parking will be built in covered parking structures and not exposed to rain to address potential stormwater runoff pollutant loads.
- **CBP HYD-5 (Updated):** Landscaped areas of development sites will be designed to absorb runoff from rooftops and walkways. Open or porous paving systems will be included in project designs, where feasible, to minimize impervious surfaces and absorb runoff.
- **CBP HYD-6:** UC Berkeley will continue to develop and implement the recommendations of the Strawberry Creek Management Plan and its updates, and construct improvements as appropriate. These recommendations include, but are not limited to, minimization of the amount of land exposed at any one time during construction as feasible; use of temporary vegetation or mulch to stabilize critical areas where construction staging activities must be carried out prior to permanent cover of exposed lands; installation of permanent vegetation and erosion control structures as soon as practical; protection and retention of natural vegetation; and implementation of post-construction structural and non-structural water quality control techniques.

These CBPs would ensure that the potential future development that would implement the proposed LRDP Update would adequately handle runoff such that it would not exceed stormwater drainage capacity or result in water quality impacts. The ongoing implementation of CBP HYD-1 through CBP HYD-6, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional water quality effects. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction and short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Therefore, with the implementation of UC Berkeley policies, including these CBPs, in conjunction with State and local regulatory requirements, development and redevelopment pursuant to the proposed project would not violate any water quality standards or waste discharge requirements for both construction and operational phases, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

The proposed Housing Project #1 would occupy a 0.92-acre site that is currently developed with parking lots and structures. Over 99 percent of the site consists of impervious surfaces. The proposed project would decrease the amount of impervious surfaces (by 4.5 percent and would include underground stormwater treatment and retention measures to meet regulatory requirements.³⁷ Since shallow groundwater is present beneath the site and two belowground floors are proposed as part of the project, construction dewatering would be required.

Construction Impacts

Because the project site is less than one acre, development of Housing Project #1 would not be required to comply with the SWRCB's Construction General Permit, which includes filing PRDs and preparation of a SWPPP.

Since shallow groundwater is present beneath the site, construction dewatering will be required. Because residual soil and groundwater contamination were reported on-site from the previous operations of gasoline stations at the site, a permit must be obtained from EBMUD and testing must be conducted prior to the discharge of groundwater. A dewatering plan must be submitted by the contractor and approved by EH&S and Facilities Services prior to the start of construction to ensure that all disposal of water is in accordance with State and local regulations.

With the implementation of the construction BMPs, adherence to UC Berkeley policies, and compliance with applicable State and local regulations, impacts to water quality during construction would be *less than significant*.

Operational Impacts

Water quality in stormwater runoff is regulated by the Phase II Small MS4 permit, which includes the F.5.g provisions that incorporate post-construction stormwater control/LID measures. All new development or redevelopment projects that create and/or replace more than 5,000 square feet of impervious surface would be classified as Regulated Projects and would be subject to the F.5.g provisions of the permit, requiring site design, source control, runoff reduction, and stormwater treatment.

Housing Project #1's stormwater management strategy is designed to manage runoff and treat and remove pollutants prior to discharge. The final plan may include a combination of on-site treatment methods and participation in a credit program using a centralized stormwater management facility as described earlier in this section, that meets or exceeds MS4 requirements..

³⁷ BDE Architecture, March 20, 2020, Helen Diller Anchor House Schematic Design.

Compliance with the F.5.g provisions of the Phase II Small MS4 permit and adherence to UC Berkeley's policies and CBP HYD-1 through CBP HYD-6 would reduce operational impacts to water quality to *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Housing Project #2 would involve changing the land use of People's Park, which currently consists of demonstration gardens, lawn space, a paved basketball court, a picnic area, a small wooden stage, and a public restroom building. The proposed project would include a student housing building, a separate affordable and supportive housing building, and public open space. Over 50 percent of the project site would be devoted to open space, landscaping, hardscape, and the incorporation of a People's Park commemorative program.

Construction Impacts

Since the project would involve the disturbance of more than one acre of land, development of Housing Project #2 would be required to comply with the requirements of the Construction General Permit, which includes submitting PRDs to the SWRCB and preparing and implementing a SWPPP that includes measures to reduce the potential for erosion, siltation, and pollutants from entering the storm drain system. EH&S or a designated third party would also verify that the proposed project complies with all applicable requirements and BMPs.

It is possible that construction dewatering may be required because of the presence of shallow groundwater. No issues regarding contaminated soil or groundwater have been reported at the site. However, a dewatering plan must be submitted by the contractor and approved by EH&S and Facilities Services prior to the start of construction to ensure that all disposal of water is in accordance with State and local regulations. With implementation of the provisions in the Construction General Permit and compliance with UC Berkeley policies, impacts to water quality during construction would be *less than significant*.

Operational Impacts

The proposed Housing Project #2 would include post-construction stormwater controls necessary to meet requirements in the Phase II Small MS4 permit. Stormwater controls considered for the proposed Housing Project #2 include:

- Bioretention facilities such as flow-through planters or rain gardens that contain biotreatment soil and receive runoff from impervious areas such as roofs and hardscapes. Bioretention facilities are typically sized to retain stormwater from 4 percent of the effective impervious area at the site. Soils beneath the site are silty clays with low infiltration rates, which would require bioretention facilities to have underdrains in the aggregate storage layer.
- Vegetated roof trays to reduce the effective impervious area of roofs.

- Landscaped areas that act as self-treating or self-retaining areas.
- Permeable pavements installed at paths and hardscapes that act as self-retaining areas. A perforated underdrain may be needed due to the low infiltration rate of the existing soil.
- A combination of one or more of the controls described above and participation in the centralized stormwater facilities management project credit system described earlier in this section.

The project is also designed to achieve Leadership in Energy and Environmental Design (LEED) v4.1 Rainwater Management credit. Runoff from impervious surfaces is required to be treated using LID measures to satisfy the credit. Retaining the 80th percentile of rainfall events will achieve one LEED credit, retaining the 85th percentile event will achieve two points, and retaining the 90th percentile event will achieve three points.³⁸

The locations of post-construction BMPs and permeable pavement, bioretention facilities, and landscaped areas would be described in more detail in the final stormwater management plan. Alternatively, if the stormwater credit program is approved by the RWQCB before the start of the project, centralized stormwater management facilities that exceed the MS4 requirements may be installed in lieu of these stormwater treatment measures. Compliance with the F.5.g provisions of the Phase II Small MS4 permit, UC Berkeley's policies, and CBPs would reduce operational impacts to water quality to *less than significant*.

Significance without Mitigation: Less than significant.

HYD-2	The proposed project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
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LRDP Update

The LRDP Update would result in a significant environmental impact if it would substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. New development and redevelopment under the LRDP Update could result in an increase in impervious surfaces, thus reducing groundwater recharge. Also, new projects that involve construction dewatering could have a temporary impact on the shallow groundwater aquifer.

Groundwater Recharge

Development of increased impervious surface areas in the watershed can reduce infiltration of rainwater into the ground to recharge water levels and could lead to lowering the baseflow of Strawberry Creek. However, most development under the proposed LRDP Update would occur in areas that are urbanized and mostly impervious. New projects are required to implement BMPs and LID measures, per the F.5.g post-

³⁸ University of California, Berkeley, 2020, People's Park Housing Project: Detailed Project Program, dated June 1, 2020.

construction measures in the Phase II Small MS4 Permit, which are expected to increase the potential for rainwater infiltration. Site design, source control, and LID treatment measures minimize the impact of impervious areas with pervious pavements, drainage to landscaped areas and bioretention areas, and the collection of rooftop runoff in cisterns or discharge to rain gardens. These measures also increase the potential for groundwater recharge. Although construction dewatering may be required for some projects due to the presence of shallow groundwater, these impacts are temporary in nature and would not substantially interfere with groundwater recharge nor contribute to the lowering of the local groundwater table. Therefore, impacts associated with groundwater recharge would be *less than significant*.

Groundwater Use

As mentioned in Section 5.9.1.2, the EIR Study Area is within the East Bay Plain groundwater subbasin. While the RWQCB identifies beneficial uses of the basin as municipal, industrial, and agricultural water supply, EBMUD does not currently extract groundwater to meet the water demand in its service area.³⁹ The confined, deep aquifer of the East Bay Plain is only present in the southern half of the subbasin in sufficient quantities to meet municipal supply demands. The deep aquifer thins out to the north and becomes an insignificant source of groundwater south of downtown Oakland. The remaining portion of the East Bay Plain Subbasin, which extends beneath the EIR Study Area, has shallow aquifers that cannot serve as a significant source of groundwater.⁴⁰ The groundwater basin is not currently the local water supply and does not serve local or planned land uses.

As part of the proposed project, UC Berkeley and future development projects would implement the following hydrology and water quality (HYD) CBP:

CBP HYD-7: UC Berkeley will continue to review each development project, to determine whether rainwater infiltration to groundwater is affected. If it is determined that existing infiltration rates would be adversely affected, UC Berkeley will design and implement the necessary improvements to retain and infiltrate stormwater. Such improvements could include retention basins to collect and retain runoff, grassy swales, infiltration galleries, planter boxes, permeable pavement, or other retention methods. The goal of the improvement should be to ensure that there is no net decrease in the amount of water recharged to groundwater that serves as freshwater replenishment to Strawberry Creek. The improvement should maintain the volume of flows and times of concentration from any given site at pre-development conditions.

Continued implementation of CBP HYD-7 would minimize impacts to groundwater recharge from potential future development in the EIR Study Area. The ongoing implementation of CBP HYD-7, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional groundwater impacts. As described in Chapter 5, Environmental

³⁹ East Bay Municipal Utility District, July 2016, 2015 Urban Water Management Plan, https://www.ebmud.com/index.php/download_file/force/3908/1402/?UWMP-2015-_BOOK-FINALweb_secure.pdf, accessed September 3, 2020.

⁴⁰ East Bay Municipal Utility District, July 2016, 2015 Urban Water Management Plan, [file:///C:/Users/delchammas/Downloads/UWMP-2015-_BOOK-FINALweb_secure%20\(9\).pdf](file:///C:/Users/delchammas/Downloads/UWMP-2015-_BOOK-FINALweb_secure%20(9).pdf), accessed August 25, 2020.

Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Although UC Berkeley has two groundwater supply wells within the Campus Park, only one is active, and groundwater usage is limited to filling the tanks of UC Berkeley's surface washing rigs. New development and redevelopment projects for the EIR Study Area would obtain water from EBMUD surface water sources and thus would not decrease groundwater supplies. Impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Groundwater recharge could be reduced if permeable areas are replaced by impermeable surfaces. Housing Project #1 is currently developed with over 99 percent impervious areas, and the proposed project would decrease the amount of impervious areas by 4.5 percent. Green infrastructure measures as discussed in impact discussion HYD-1 would also facilitate opportunities for groundwater recharge. Because the proposed project would decrease impervious surfaces, this project is compliant with CBP HYD-7, as described above.

Buildout of the proposed Housing Project #1 would lead to an increased demand for water. However, EBMUD does not use groundwater as a water supply source, and therefore the project would not impact groundwater supplies. A detailed discussion on water supply is provided in Chapter 5.17, Utilities and Services Systems, of this Draft EIR.

In summary, compliance with the Phase II Small MS4 permit, UC Berkeley's policies and CBPs, and the proposed stormwater design measures would ensure the project would have a *less-than-significant* impact on groundwater supply and recharge.

Significance without Mitigation: Less than significant.

Housing Project #2

The proposed project would increase impervious surfaces and possibly reduce groundwater recharge. However, more than 50 percent of the site would be dedicated to open space and include stormwater measures such as bioretention facilities, landscaped areas, and permeable pavements that would increase the potential for groundwater recharge. Buildout would result in an increased demand for water from EBMUD. However, EBMUD does not use groundwater for water supply, and therefore implementation of the project would not decrease groundwater supplies. A detailed discussion on water supply is provided in Chapter 5.17, Utilities and Services Systems, of this Draft EIR.

Compliance with the Phase II Small MS4 permit, UC Berkeley's policies and CBPs, and the stormwater measures that will facilitate groundwater recharge would ensure the proposed development would have a *less-than-significant* impact on groundwater supply and recharge.

Significance without Mitigation: Less than significant.

HYD-3	The proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in a substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows.
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LRDP Update

Erosion and Siltation

New development or redevelopment in the EIR Study Area and changes in land use could increase impervious surfaces. This in turn could increase stormwater runoff, peak discharges to drainage channels, and the potential to cause erosion or siltation in drainage swales and streams. Increases in tributary flows can exacerbate creek bank erosion or cause destabilizing channel incision.

All projects pursuant to the proposed LRDP Update would be required to implement construction phase BMPs as well as post-construction site design, source-control, and treatment control measures in accordance with the requirements of the Construction General Permit and the Phase II MS4 Permit. Typical construction BMPs include tarping, coir or jute matting, catch basin inlet protection, water trucks, street sweeping, and stabilization of truck entrance/exits. Each new development or redevelopment project that disturbs one or more acre of land would be required to prepare and submit a SWPPP to the SWRCB that describes the measures to control discharges from construction sites. Additionally, the SCMP contains policies to reduce temporary construction water quality impacts.

Once projects have been constructed, Provision F.5.g requirements in the Phase II Small MS4 permit must be implemented. These requirements include site design measures, source-control measures, LID features, and stormwater treatment measures that address runoff to reduce the potential for erosion and siltation. Site design measures include limits on clearing, grading, and soil compaction; minimizing impervious surfaces; conserving the natural areas of the site as much as possible; complying with stream setback ordinances; and protecting slopes and channels from erosion. LID measures include the use of permeable pavements, directing runoff to pervious areas, and the construction of bioretention areas. The F.5.g requirements also include operation and maintenance procedures and an agreement to maintain any stormwater treatment and control facilities for perpetuity.

In addition, UC Berkeley will continue to develop and implement the recommendations of the SCMP and its updates. This includes minimizing the amount of land exposed during construction, using temporary vegetation or mulch to stabilize critical areas, installing permanent vegetation and erosion control measures as soon as practical, protection and retention of natural vegetation, and implementing post-construction water quality control measures. Compliance with these regulatory requirements would ensure that erosion and siltation impacts from new development and redevelopment projects would be *less than significant*.

Flooding On- or Off-Site

New development and/or redevelopment and changes in land uses could result in an increase in impervious surfaces, which in turn could result in an increase in stormwater runoff, higher-peak discharges to drainage channels, and the potential to cause nuisance flooding in areas without adequate drainage facilities. However, most of the proposed LRDP Update projects would occur on already developed parcels and would not substantially reduce pervious surfaces. In addition, all proposed development and redevelopment must comply with the requirements of the Phase II MS4 Permit. Regulated projects must implement LID and site design BMPs, which effectively minimize imperviousness, retain or detain stormwater on-site, decrease surface water flows, and slow runoff rates. Adherence to these regulatory requirements and compliance with UC Berkeley's CBPs would minimize the amount of stormwater runoff from new development and redevelopment within the EIR Study Area. Therefore, proposed projects under the proposed LRDP Update would not result in substantial flooding on- or off-site, and impacts would be *less than significant*.

Stormwater Drainage System Capacity

As stated in the previous impact discussions, an increase in impervious surfaces with new development or redevelopment within the EIR Study Area could result in increases in stormwater runoff, which in turn could exceed the capacity of existing or planned stormwater drainage systems. The combined flows from the North and South Forks of Strawberry Creek enter the City of Berkeley's storm drain system at Oxford Street. According to the City's 1994 Storm Drain Master Plan, flooding could occur at this location following a 25-year storm event. Green infrastructure improvements along Strawberry Creek that have been implemented by UC Berkeley since 1994 may have reduced potential flooding at this location. The City is in the process of updating the Storm Drain Master Plan.⁴¹

All new development and redevelopment projects would be required to comply with the Phase II Small MS4 permit requirements. Implementation of the F.5.g provisions for new development and redevelopment, which include LID design and bioretention areas, would minimize increases in peak-flow rates or runoff volumes, thus reducing stormwater runoff to the storm drain system. In addition, UC Berkeley manages runoff into storm drain systems such that the aggregate effect of new projects is no net increase in runoff over existing conditions. This would alleviate the potential for flooding at the City's Oxford Street storm drain.

⁴¹ City of Berkeley, 2020, Berkeley Strategic Plan Quarterly Report, dated January 24, 2020.

Most of the proposed development in the EIR Study Area would be projects in the Campus Park or the City Environs Properties on already urbanized parcels with connections to existing storm drain systems. With the implementation of the F.5.g provisions for new projects in the EIR Study Area, there would be a reduction in stormwater runoff, and compliance with UC Berkeley's CBPs for no net increase in runoff would eliminate the potential for flooding on- or off-site.

Also, new development and redevelopment in the EIR Study Area would not create substantial additional sources of polluted runoff. During the construction phase, projects would be required to prepare SWPPPs, thus limiting the discharge of pollutants from the site. During operation, projects must implement LID measures that minimize the amount of stormwater runoff and associated pollutants per the Phase II MS4 permit.

With implementation of these control measures and UC Berkeley's policy of no net increase in stormwater runoff from new development and redevelopment sites, stormwater runoff from the proposed project would not exceed the capacity of existing or planned storm drain facilities, and impacts would be *less than significant*.

Redirecting Flood Flows

The previous discussion regarding on- and off-site flooding is applicable for this discussion on impeding or redirecting flood flows. Since new development projects are required to comply with F.5.g provisions of the Phase II Small MS4 Permit and retain stormwater on-site via the use of bioretention facilities, any flood flows would also be temporarily retained on-site, which would minimize the potential for flooding impacts. Impact discussion HYD-4 addresses the potential for impeding or redirecting flood flows with development in the 100-year floodplain.

As part of the proposed project, UC Berkeley and future development projects would implement the hydrology and water quality (HYD) CBPs listed here:

- **CBP HYD-8:** Dewatering, when needed, will be monitored and maintained by qualified engineers in compliance with the Campus Design Standards and applicable regulations.
- **CBP HYD-9:** The campus storm drain system will be maintained and cleaned to accommodate existing runoff.
- **CBP HYD-10:** For projects in the City Environs Properties, improvements will be coordinated with the City of Berkeley's Public Works Department.
- **CBP HYD-11:** Development that encroaches on creek channels and riparian zones will be prohibited. An undisturbed buffer zone will be maintained between proposed capital projects and creek channels.
- **CBP HYD-12:** UC Berkeley will continue to develop and implement a maintenance program for Strawberry Creek, as described in the Strawberry Creek Management Plan and its updates. Actions will include, but not be limited to: clear trash racks, catch basins, channels, ponds, bridges, and over-crossing structures of debris that could block flows and increase flooding potential in Strawberry Creek and its tributaries within the LRDP Planning Area. Cleaning of debris in creek channels will be done during storm events and prior to the start of the rainy season as part of routine campus grounds maintenance.

- **CBP HYD-13:** UC Berkeley will continue to manage runoff into storm drain systems such that the aggregate effect of projects implemented pursuant to the LRDP creates no net increase in runoff over existing conditions.

These CBPs establish procedures and development requirements to maintain drainage systems and patterns. The ongoing implementation of CBP HYD-8 through CBP HYD-13, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional drainage impacts. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction and short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

With the implementation of regulatory requirements and UC Berkeley's CBP HYD-8 through CBP HYD-13, these hydrology impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Erosion and Siltation

Storm drainage for the Housing Project #1 site would connect to the City of Berkeley's storm drain system. Stormwater runoff from the project site would be directed by an internal storm drain system to the southern edge of the property and then west to an existing stormwater catch basin at the intersection of University Avenue and Walnut Street. Future redevelopment would not involve the alteration of any natural drainage channels or any watercourse.

The proposed project would require grading or soil exposure during construction. To minimize impacts to erosion and sedimentation, the project would be required to implement construction BMPs and comply with UC Berkeley's CBPs (refer to the impact discussion HYD-1, Construction Impacts). Compliance with the established protocols and policies would ensure that construction impacts from erosion and siltation would be less than significant.

Housing Project #1 would generate stormwater runoff during the operational phase. However, since the existing site is over 99 percent impervious surfaces and the proposed project would decrease impervious surfaces by 4.5 percent, the impact to stormwater runoff would be negligible. To comply with the F.5.g provisions of the Phase II Small MS4 permit, the stormwater management plan is designed to manage runoff and treat and remove prior to discharge to the City's storm drain system. Alternatively, if the stormwater credit program is approved by the RWQCB before the start of the project, centralized stormwater management facilities that exceed the MS4 requirements may be installed in lieu of on-site stormwater treatment measures. Future redevelopment would also be required to comply with the requirements of the City's municipal code listed in Section 5.9.1.1. Therefore, the proposed Housing Project

#1 would not result in a substantial erosion or siltation on- or off-site and impacts would be *less than significant*.

Flooding On- or Off-Site and Stormwater Drainage System Capacity

Regarding increases in stormwater flow and the potential for on-site or off-site flooding, the proposed project would decrease the impervious area by 4.5 percent and therefore would not increase runoff or peak flows. Implementation of on-site stormwater control and treatment measures or, alternatively, centralized stormwater management facilities would further reduce stormwater flows to the storm drain system. UC Berkeley manages runoff into storm drain systems such that the aggregate effect of new projects creates no net increase in runoff over existing conditions. Adherence to the requirements of the Phase II MS4 permit and implementation of LID and stormwater treatment control measures, including CBP HYD-13, would minimize the amount of stormwater runoff generated by the project and would not result in on- or off-site flooding or an exceedance of the capacity of the storm drain system. Thus, impacts would be *less than significant*.

Redirecting Flood Flows

The proposed site is not in a 100-year floodplain or within a dam or tsunami inundation zone. Therefore, there would be *no impacts* related to impeding or redirecting flood flows.

Significance without Mitigation: Less than significant.

Housing Project #2

Erosion and Siltation

Although the proposed project would include an increase in impervious surfaces, over 50 percent of the site would be dedicated to open space and include stormwater measures such as grassy bioswales, bioretention facilities, landscaped areas, flow-through planters, rain gardens, vegetated roof trays, and permeable pavements. Excess stormwater would be collected via on-site 12-inch storm drain laterals and conveyed to the City's storm drain system. There is a catch basin at the intersection of Dwight Way and Bowditch Street that connects to a 36-inch City storm drain, and there are catch basins in Haste Street that connect to an existing 10-inch City storm drain. Proposed development would not involve the alteration of any natural drainage channels or any watercourse.

Construction activities on-site would be required to comply with the requirements of the State Construction General Permit, the City's municipal code, and UC Berkeley's CBPs (as described in the impact discussion HYD-1, Construction Impacts). Compliance with these regulations would ensure that erosion and siltation impacts during construction would be *less than significant*.

Furthermore, Housing Project #2 would comply with the F.5.g provisions of the Phase II Small MS4 permit to manage post-construction runoff impacts. As discussed previously, over 50 percent of the site would remain open space, and various BMPs are proposed for the site, which would reduce stormwater runoff

and improve water quality. Therefore, the proposed Housing Project #2 would not result in a substantial erosion or siltation on- or off-site, and impacts would be *less than significant*.

Flooding On- or Off-Site and Stormwater Drainage System Capacity

Runoff from the proposed project would be directed to the same stormwater drains as under existing conditions. Pursuant to CBP HYD-13, UC Berkeley also manages runoff into storm drain systems such that the aggregate effect of new projects would result in no net increase in runoff over existing conditions. Therefore, runoff from the proposed Housing Project #2 would not result in flooding on or off-site or exceed the capacity of the storm drain system. Thus, impacts would be *less than significant*.

Redirecting Flood Flows

Additionally, the proposed site is not subject to flooding hazards from Strawberry Creek, tsunamis, dams, or seiches and therefore, the proposed project would not impede or redirect flood flows. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

HYD-4	The proposed project would not risk release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone.
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LRDP Update

Flood Hazard Zones

As shown on Figure 5.9-2, FEMA 100-year Floodplain Map, the areas adjacent to Strawberry Creek on the Campus Park are in the 100-year flood zone. There are no 100-year flood zones located within the Clark Kerr Campus, the Hill Campus West, the Hill Campus East, and the City Environs Properties. None of the proposed development or redevelopment sites shown on Figure 3-3, Potential Areas of New Development and Redevelopment, and Figure 3-4, Potential Areas of Renovation, are within the 100-year floodplain, and CBP HYD-11 prohibits development that encroaches on creek channels and riparian zones.

If future development under the proposed LRDP Update would involve the placement of structures or housing in the 100-year floodplain, UC Berkeley will review the plans for all structures for compliance with FEMA requirements. As per the Campus Design Standards, all development within the 100-year floodway is prohibited. All structures built within the 100-year floodplain shall be floodproofed, according to the FEMA regulations. Development in the 100-year floodplain that poses an obstruction to floodwaters or reduces the stormwater carrying capacity of the channel or floodplain shall be avoided. These actions would ensure that the implementation of the proposed LRDP Update would not impede or redirect flows in a manner that results in flooding, and impacts would be *less than significant*.

Dam Inundation, Tsunami, and Seiches

As discussed in Section 5.9.1.2, Existing Conditions, the EIR Study Area is not within the inundation zone of any dams or mapped tsunami inundation areas. There are no large bodies of water in the vicinity of the EIR Study Area that could trigger a seiche. Therefore, there would be *no impact* associated with dams, tsunami, or seiches.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

According to FEMA FIRM No. 06001C0057G dated August 3, 2009, the Housing Project #1 and #2 sites are not within a 100-year flood hazard zone.⁴² According to maps compiled by the California Division of Safety of Dams,⁴³ the project sites are not within a dam inundation zone and there are no nearby bodies of water that could trigger seiches that would impact the sites. The project sites are also not in a tsunami inundation area.⁴⁴ Therefore, there would be *no impact*.

Significance without Mitigation: No impact.

HYD-5	The proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.
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LRDP Update

Adherence to the Construction General Permit, UC Berkeley policies and CBPs, and the Phase II MS4 Permit would ensure that surface and groundwater quality are not adversely impacted during construction and operation of development and redevelopment under the proposed LRDP Update. As a result, the proposed projects would not obstruct or conflict with the implementation of the San Francisco Basin Plan. All development and redevelopment projects would be within the EBMUD service area, which relies solely on surface water supply. Groundwater is not currently used as a municipal water supply source, and the northern portion of the East Bay Plain groundwater basin, where the EIR Study Area is situated, does not have sufficient groundwater yield to be used as a future groundwater supply source. Therefore, future projects under the proposed LRDP Update would not conflict with the sustainable management of the groundwater basin. Buildout of the proposed LRDP Update would not obstruct or conflict with the RWQCB's Basin Plan or any groundwater management plan, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

⁴² Federal Emergency Management Agency, 06001C0057G, <http://msc.fema.gov/portal>, accessed on September 7, 2020.

⁴³ California Division of Safety of Dam, 2020, California Dam Breach Inundation Maps, https://fmds.water.ca.gov/webgis/appid=dam_prototype_v2, accessed August 25, 2020.

⁴⁴ California Governor's Office of Emergency Services, August 12, 2019, Tsunami Inundation Zones, <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=4d56b41ba6c64d538ec3a91d40078dff>, accessed September 7, 2020.

Housing Projects #1 and #2

As required by the Phase II Small MS4 permit and the Construction General Permit, BMPs must be implemented during both the construction and operational phases of Housing Projects #1 and #2. These BMPs would control and prevent the release of sediment, debris, and other pollutants into the storm drain system. Implementation of BMPs during construction would be in accordance with the provisions of the SWPPP for Housing Project #2, which would minimize the release of sediment, soil, and other pollutants. Operational BMPs will be required to meet the F.5.g provisions of the Phase II Small MS4 permit. These requirements include the incorporation of site design, source control, and treatment control measures to treat and control runoff before it enters the storm drain system.

As described in the impact discussions HYD-1 and HYD-3, with implementation of site-specific BMPs and implementation of the requirement of the City's municipal code and UC Berkeley policies and CBPs, the potential impact on water quality would be less than significant, and the proposed projects would not conflict with or obstruct the implementation of the Basin Plan.

Both Housing Projects #1 and #2 would be serviced by EBMUD, which does not rely on groundwater for its water supply. Therefore, the proposed projects would not conflict with the sustainable management of the groundwater basin. Therefore, the projects would not obstruct or conflict with implementation of the Basin Plan or any groundwater management plan, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

HYD-6	The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to hydrology and water quality.
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LRDP Update

Cumulative impacts to hydrology, drainage, flooding, and water quality are considered for the watersheds overlapping the study area: Strawberry Creek watershed, Derby Creek watershed, and Temescal Creek watershed.

New development and redevelopment in these watersheds could increase impervious areas, thus increasing runoff and flows into the storm drain systems. Projects within the EIR Study Area would be required to comply with UC Berkeley's Phase II MS4 Permit, and projects in the city of Berkeley and the city of Oakland would need to comply with the requirements of NPDES MS4 Permit No. CAS612008 (Order No. R2-2015-0049). The permit requirements include the implementation of BMPs that minimize stormwater runoff and integrate bioretention facilities into the site design. Implementation of these BMPs on a regional basis would reduce cumulative impacts to hydrology and drainage to less than significant. In addition, with implementation of CBP HYD-13, the contribution of the proposed project to cumulative stormwater runoff impacts would not be cumulatively considerable.

UC Berkeley projects would be required to comply with the provisions of the Construction General Permit, Phase II MS4 permit, and UC Berkeley CBPs and policies. All other cumulative projects would be required to comply with various City municipal codes, standards of approval, and policies; County ordinances; and numerous water quality regulations that control construction-related and operational discharge of pollutants in stormwater. The water quality regulations implemented by the San Francisco Bay RWQCB take a basinwide approach and consider water quality impairment in a regional context. For example, the NPDES Construction General Permit ties receiving water limitations and Basin Plan objectives to terms and conditions of the permit, and the MS4 permits encompasses all of the surrounding municipalities to manage stormwater systems and be collectively protective of water quality. Projects in these watersheds would implement structural and nonstructural source-control BMPs to reduce the potential for pollutants to enter runoff, and treatment-control BMPs to remove pollutants from stormwater. Therefore, cumulative water quality impacts would be less than significant after compliance with these permit requirements, and impacts would not be cumulatively considerable.

Although no projects are proposed within the EIR Study Area that would be constructed within the 100-year floodplain, other cumulative projects within the watersheds may be constructed within 100-year flood zones or tsunami inundation zones. Such projects would be mandated to comply with NFIP requirements. In addition, jurisdictions within these watersheds regulate development within flood zones through their municipal codes, in compliance with FEMA standards, to limit cumulative flood hazard impacts. Therefore, cumulative impacts to hydrology, drainage, and flooding would be *less than significant*, and impacts of the proposed project would not be cumulatively considerable.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

Housing Projects #1 and #2 are included in the cumulative setting for the proposed LRDP Update. As such, these impacts are incorporated into the cumulative impact analysis of the proposed LRDP Update, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

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5.10 LAND USE AND PLANNING

This chapter describes the potential land use and planning impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential land use and planning impacts, and identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts.

5.10.1 ENVIRONMENTAL SETTING

5.10.1.1 REGULATORY FRAMEWORK

University of California

Each campus in the UC system periodically prepares an LRDP, which provides a high-level planning framework to guide land use and capital investment in line with its mission, priorities, strategic goals, and enrollment projections. The purpose of an LRDP is to provide adequate planning capacity for potential population growth and physical infrastructure that may be needed to support future population levels on each UC campus. The LRDP does not mandate growth or the provision of new facilities. The current LRDP for UC Berkeley was adopted in January 2005 and projected development needs through the academic year 2020-21. The proposed LRDP Update analyzed in this EIR would replace the current LRDP.

Physical Design Framework

Principles of UC Berkeley's 2009 Physical Design Framework cover three main aspects of the campus design—land use, landscape and open space, and architecture. Development projects in the Campus Park are generally required to conform to the Physical Design Framework. The Physical Design Framework explains that accommodating for space on the Campus Park requires renovation and expansion of existing buildings, strategic building replacements, and new buildings on underutilized sites, with many renovations, expansions, and replacements conducted in conjunction with seismic improvements. In addition, the Campus Park Guidelines included in the Physical Design Framework define preservation zones to protect the campus's most significant open spaces. Preservation areas are located throughout the UC Berkeley campus, including riparian areas along Strawberry Creek and rustic woodlands adjacent to these areas, the Mining Circle, Gilman-LeConte Way, Campanile Esplanade and Campanile Way, Sproul Plaza and Sather Road, North Gate, Faculty Glade, and hill woodlands in the Hill Campus East.

Strawberry Creek Management Plan

The Strawberry Creek Management Plan was adopted in 1987 to provide a long-term comprehensive plan for protecting and enhancing the creek and its associated riparian areas. As described in Chapter 3, Project Description, Strawberry Creek is part of a larger, critical watershed that encompasses much of the EIR Study Area. Strawberry Creek flows openly through the Hill Campus East, the Hill Campus West, and the Campus Park before it is culverted to the San Francisco Bay, where it empties. It provides an important

natural resource on campus. The Strawberry Creek Management Plan includes strategies for point source controls, channel stabilization, grade control, and aquatic and riparian habitat restoration.

Clark Kerr Campus Memorandum of Understanding and Declaration of Covenants and Restrictions

In 1982, UC Berkeley executed a Memorandum of Understanding with the City of Berkeley and a Declaration of Covenants and Restrictions with neighboring property owners to restrict development at the Clark Kerr Campus through the year 2032. These agreements generally restrict significant change in use or significant increase in density at the Clark Kerr Campus with certain exceptions.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to land use and planning as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.10.3, Impact Discussion.

Regional

As described in Chapter 5, Environmental Analysis, of this Draft EIR, Plan Bay Area is the Bay Area's Regional Transportation Plan and Sustainable Communities Strategy (SCS). Plan Bay Area was adopted on July 18, 2013, with an update, Plan Bay Area 2040, adopted on July 26, 2017. Plan Bay Area was prepared by the Association of Bay Area Governments (ABAG) in partnership with the Metropolitan Transportation Commission (MTC), the Bay Area Air Quality Management District, and the Bay Conservation and Development Commission. Each of the agencies involved in the SCS has a role in regional governance. ABAG is the official comprehensive planning agency for the San Francisco Bay Area and primarily focuses on regional land use planning, housing, environmental quality, and economic development. MTC is tasked with regional transportation planning, coordinating, and financing. The Bay Area Air Quality Management District is responsible for regional air pollution regulation. The Bay Conservation and Development Commission's focus is to preserve, enhance, and ensure responsible use of the San Francisco Bay, including promoting public access. The SCS sets a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce greenhouse gas emissions from transportation (excluding goods movement) beyond the per capita reduction targets identified by the California Air Resources Board. Implementation of Plan Bay Area 2040 would achieve a 16 percent per capita reduction of GHG emissions by 2040.¹

In 2008, MTC/ABAG initiated a regional effort (FOCUS) to link local planned development with regional land use and transportation planning objectives. Through this initiative, local governments identified Priority Development Areas (PDA) and Transit Priority Areas (TPA). The PDAs and TPAs form the implementing framework for Plan Bay Area. PDAs are areas along transportation corridors that are served by public

¹Metropolitan Transportation Commission and Association of Bay Area Governments, *Plan Bay Area 2040*, Strategy for a Sustainable Region, page 69.

transit and allow opportunities for development of transit-oriented, infill development within existing communities that are expected to host the majority of future development. TPAs are similar in that they are formed one-half mile around a major transit stop such as a transit center or rail line. Portions of the EIR Study Area are located within a TPA and PDA. These are depicted on Figure 5-1, Priority Development Areas and Transit Priority Areas, in Chapter 5, Environmental Analysis, and described further in Section 5.10.1.2, Existing Conditions.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, when using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the cities of Berkeley and Oakland related to land use and planning, which UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

City of Berkeley

Berkeley General Plan

The City of Berkeley General Plan Land Use Element provides general direction and guidance for the physical development of Berkeley. It is coordinated with the other general plan elements, especially the transportation element, to ensure that new housing and future development occurs in areas best served by public transportation. Land use policies in the Berkeley General Plan Land Use Element include:

- Policy LU-3: Infill Development: Encourage infill development that is architecturally and environmentally sensitive, embodies principles of sustainable planning and construction, and is compatible with neighboring land uses and architectural design and scale.
- Policy LU-14: Community Service Centers: Work with the Berkeley Unified School District and the University of California to establish a network of community centers including school sites, neighborhood resource centers, and City facilities that offer community services such as childcare, health care, and recreational programs.
- Policy LU-37: University Housing: Encourage the university to maximize the supply of housing for students, faculty, and staff to minimize the impacts of the university on the citywide supply of housing.
- Policy LU-40: Public Use of University Facilities and Grounds: Continue to support maximum opportunities for citizen use of university libraries and recreational facilities, the maintenance of the hill lands as open space, and the adoption of campus development standards and policies to conserve and enhance present open space resources.

Berkeley Downtown Area Plan

The Berkeley Downtown Area Plan provides specific guidance to enhance and guide development within the Downtown. Downtown Berkeley is adjacent to the Campus Park on the west and contains some UC Berkeley-owned properties, including Housing Project #1. Policies within the Downtown Area Plan relevant to land use and UC Berkeley include:

- Goals ES-3: Encourage high density, highly livable development to take advantage of Downtown’s proximity to regional transit and to improve the availability of diverse walk-to destinations – such as retail, services, culture, and recreation.
 - Policy ES-3.1: Land Use: Encourage development with high intensities close to transit, and encourage a mix of uses that allows most needs to be met on foot.
 - Policy ES-3.3: Urban Design: Encourage exceptional, high-quality new architecture, and minimize noise, wind, glare, and other impacts from development.
- Goal LU-1: Encourage a thriving, livable Downtown that is a focal point for the city and a major destination for the region, with a unique concentration of housing, jobs, and cultural destinations near transit, shops, and amenities.
 - Policy LU-1.1: Downtown Uses: Encourage uses that allow people who live, work, and learn in Downtown to meet daily needs on foot.
 - Policy LU-1.5: Downtown Intensities and Building Heights: To advance Downtown as a vibrant city center and encourage car-free options near transit, accommodate urban intensities by using building heights that are appropriate and feasible... All new buildings shall deliver significant public benefits, many of which should be in proportion to building height. Buildings exceeding a height of 85 feet shall be subject to shadow studies and visual analysis – and buildings exceeding a height of 120 feet shall be subject to wind analysis – to avoid detriment to residential areas, public streets, and public open spaces, and if necessary, require modifications to the project design including setbacks and stepbacks to reduce view and shadow impacts. Provide appropriate transitions to Residential areas that surround Downtown as described in Policies LU-4.2.
- Goal LU-4: New development should enhance Downtown’s vitality, livability, sustainability, and character through appropriate land use and design.
 - Policy LU-4.1: Transit-Oriented Development: Encourage use of transit and help reduce regional greenhouse gas emissions, by allowing buildings of the highest appropriate intensity and height near BART and along the Shattuck and University Avenue transit corridors.
 - Policy LU-4.2: Development Compatibility: Encourage compatible relationships between new and historic buildings and reduce localized impacts from new buildings to acceptable levels. The size and placement of new buildings should: reduce street-level shadow, view, and wind impacts to acceptable levels; and maintain compatible relationships with historic resources (such as streetwall continuity in commercial areas).
- Goal LU-7: Maintain the existing scale and character of residential-only areas.
 - Policy LU-7.1: Neighborhood Protections: Seek to reduce development pressures in residential-only areas, to promote the preservation and rehabilitation of older structures—and to conserve the scale of their historic fabric.
- Goal OS-2: Promote watershed health through the use of ecologically beneficial landscaping and other features. Incorporate natural features throughout Downtown to improve its visual quality, help restore natural processes, and reinforce Berkeley’s commitment to environmental sustainability.

- Policy OS-2.1: Green Infrastructure: Promote green infrastructure and other ecologically beneficial features within the design of public open spaces, streets and on private property.
- Policy OS-2.5: Water Conservation: New landscaping and retrofits should incorporate effective water conservation and water reuse features.

Berkeley Southside Plan

The 2011 Berkeley Southside Plan applies to the city's Southside neighborhood, which encompasses approximately 28 city blocks south of the Campus Park. Land use within this area is a mix of residential, institutional, office, retail, social/cultural, mixed-use, open space, and others, and there are a number of UC Berkeley-owned properties in this area, including Housing Project #2. Some of the goals of the land use and housing element of the Southside Plan focus on prioritizing the creation of housing, including the creation of additional affordable housing for students and local residents; the construction of infill buildings on underutilized sites; the protection of the historic, physical, and social character of the neighborhood; and the enhancement of pedestrian space. Policies from the Southside Plan relevant to the proposed project include:

- Policy LU-A2: Housing and mixed-use projects with housing for students should be the University of California's highest priority for the use of university-owned opportunity sites in the Southside except those with frontage on Bancroft.
- Policy LU-D2: Encourage the university to consider modifications to some of the existing campus buildings and facilities along Bancroft Way to create a better connection between the campus and the Southside.
- Policy LU-D3: Improve the pedestrian environment along Bancroft Way with better bus stops, wider sidewalks wherever possible, sidewalk lighting, additional street trees, and other streetscape amenities.

University Avenue Strategic Plan

The University Avenue Strategic Plan is intended to guide development along University Avenue, one of the main roadways in the City of Berkeley and located to the west of the Campus Park. Several UC Berkeley-owned properties are in this area, included Housing Project #1, which is in the Downtown Node, one of several key areas for focused development. The guiding policy for land use in the University Avenue Strategic Plan is to strengthen University Avenue as a mixed-use residential and commercial boulevard, concentrate urban high-density and mixed-use commercial and housing development in the nodes along the avenue, encourage lower-density mixed use outside the nodes, and protect and enhance the lower-density character of surrounding neighborhoods.

City of Oakland

The portion of the EIR Study Area that falls within city of Oakland boundaries is the majority of the Hill Campus East and a small portion of the Clark Kerr Campus. The City of Oakland General Plan Land Use and Transportation Element, adopted March 1998, categorizes land uses into five major categories—neighborhood housing; corridor mixed-use; industry, commerce, and institutional; special mixed-use; and recreation and open space. In addition, the city is split into separate planning areas; the Hill Campus East and the Clark Kerr Campus are part of the North Hills planning area. Land use planning in the North Hills

area centers around limitations of the hill area topography and related safety issues, and maintenance and enhancement of open space and public institutions located here.

Parts of the EIR Study Area in Oakland are largely open space and adjacent to other open space in Oakland. Open space land use principles in the Oakland General Plan Open Space, Conservation, and Recreation Element, dated June 1996, center around managing the conservation of existing open space resources, enhancing underutilized resources, creating connections between regional parks and the hillside open spaces with the rest of the city, having no net loss of public open space, and generating public involvement in renewal and restoration of open space.

5.10.1.2 EXISTING CONDITIONS

This section describes the existing land uses in the EIR Study Area and the surrounding land uses.

LRDP Update

As described in Chapter 3, Project Description, of this Draft EIR, the EIR Study Area includes locations in the cities of Berkeley and Oakland and in the counties of Alameda and Contra Costa. Existing land uses in the EIR Study Area are primarily urban and developed, varied in character and type of development, and densely populated, with open space in the eastern hills.

UC Berkeley's campus has been developed most recently under the implementation of the current LRDP. UC Berkeley's campus includes properties categorized under five zones: the Campus Park, the Hill Campus West, the Hill Campus East, the Clark Kerr Campus, and the City Environs Properties. Figure 3-1, EIR Study Area, in Chapter 3, Project Description, illustrates the location and parameters of these land use zones. Within these zones, UC Berkeley campus uses consist of academic life spaces, including classrooms, teaching labs, research spaces, offices, conference space, study space, open labs, and library stack and processing space. Campus life spaces include athletic, recreation, wellness, and social spaces; assembly and exhibition facilities; and dining facilities. Other uses are housing, open space, and parking. The proposed LRDP Update's building and land use strategy provides guidance around the location and types of potential future development across the UC Berkeley campus for these uses, which are described in Section 3.5.1.3, Land Use Element, of Chapter 3, Project Description.

Campus Park

The Campus Park contains the majority of UC Berkeley's built space and is entirely within the city of Berkeley limits. It is developed with a mix of campus life, academic life, open space, and parking uses. The open space throughout the Campus Park includes Strawberry Creek and various glades, groves, or other open spaces—such as the West Crescent on the western edge, Memorial Glade and Observatory Hill on the northern side, and the North Field and Faculty Glade in the southeast. As shown in Table 3-1, Proposed LRDP Update Buildout Projections, in Chapter 3, Project Description, of this Draft EIR, the building square footage in the Campus Park totals 8,591,592 square feet. Approximately 85 percent of that is devoted to academic life space, 11 percent to campus life space, and 4 percent to parking. As shown on Figure 5-1, Priority Development Areas and Transit Priority Areas, all of the Campus Park is in a TPA but not in a PDA,

though it is adjacent to the Downtown Berkeley PDA to the west and the Southside/Telegraph PDA to the south.

Hill Campus West

The Hill Campus West contains housing for students and campus life uses, such as a number of recreational facilities, including the California Memorial Stadium, Student Athlete High Performance Center, Witter Rugby Field, Levine-Fricke Softball Field, Haas Clubhouse, Maxwell Family Field, as well as the Stadium Garage, and Hearst Greek Theatre. As shown in Table 3-1, Proposed LRDP Update Buildout Projections, the Hill Campus West contains 911,429 square feet of building space, of which 52 percent is dedicated to housing, 48 percent to campus life uses, and less than 1 percent to academic life uses. The Hill Campus West is entirely within city boundaries. As shown on Figure 5-1, Priority Development Areas and Transit Priority Areas, portions of the Hill Campus West are in a TPA, and its southernmost portion is in the Southside/Telegraph PDA.

Hill Campus East

The Hill Campus East is primarily open space and contains the majority of UC Berkeley's open space. Limited development in the Hill Campus East includes the Lawrence Hall of Science, UC Berkeley Botanical Garden, Space Sciences Laboratory, the Mathematical Sciences Research Institute and the Field Station for the Study of Behavior, Ecology and Reproduction, among other campus life and academic life spaces. As shown in Table 3-1, Proposed LRDP Update Buildout Projections, the Hill Campus East building space totals 318,733 square feet, of which 98 percent is dedicated to academic life uses and 2 percent to campus life uses. The Hill Campus East is mostly in city of Oakland boundaries, but the lower, westernmost parts are in city of Berkeley boundaries. As shown on Figure 5-1, the Hill Campus East is not in a TPA or PDA.

Clark Kerr Campus

The Clark Kerr Campus includes housing and campus life uses, such as student housing and amenities, conference space, the Krutch Theater, and childcare and development centers. As shown in Table 3-1, Proposed LRDP Update Buildout Projections, building space at the Clark Kerr Campus totals 452,434 square feet, of which 68 percent is dedicated to housing, 17 percent to academic life space, and 16 percent to campus life space. As shown on Figure 5-1, western portions of the Clark Kerr Campus are in a TPA but it is not in a PDA.

City Environs Properties

The City Environs Properties are dedicated to academic life, campus life, housing, open space uses, and parking interspersed among neighboring non-UC Berkeley properties. Most of these UC Berkeley properties within the EIR Study Area are within roughly one-half mile north, west, or south of the Campus Park, though some are elsewhere throughout the city of Berkeley. The City Environs Properties include 4,640,769 square feet of building space—47 percent dedicated to academic life uses, 27 percent to housing, 10 percent to campus life uses, and 16 percent to parking. As shown in Figure 5-1, the majority of the City Environs Properties are in a TPA, including both Housing Projects #1 and #2. In addition, the City Environs Properties to the west of the Campus Park (including Housing Project #1) are in the Downtown Berkeley

PDA, and the City Environs Properties to the south of the Campus Park (including Housing Project #2) are in the Southside/Telegraph PDA.

Housing Project #1

Housing Project #1 is in the Downtown Berkeley area in the City Environs Properties west of the Campus Park. Downtown Berkeley serves as the city's primary civic, office, entertainment, and retail center. UC Berkeley is not subject to local zoning and general plan policies, but for informational purposes, the project site is zoned "C-DMU Outer Core" (Downtown Mixed-Use) with Downtown land use designation under the City of Berkeley General Plan. The Downtown land use designation is characterized by high-density commercial, office, arts, culture, entertainment, and residential development, with appropriate uses including medium- and high-density housing, regional- and local-serving arts, entertainment, retail, office, cultural, open space, civic uses, and institutional uses and facilities.² Existing uses on the Housing Project #1 site include residential apartments, the UC Berkeley shuttle garage, and commercial rental space. The UC Berkeley shuttle garage, also referred to as the Oxford Garage, is a recognized architecturally historic building and a City of Berkeley historic landmark.

Under the City of Berkeley General Plan, bounding the project site are land uses designated as Avenue Commercial to the north, Institutional and Open Space to the east (UC Berkeley's Campus Park), Institutional to the south (University Hall), and Downtown to the west. The surrounding vicinity further includes a mix of Avenue Commercial, Medium-Density Residential, and High-Density Residential land uses to the north, Downtown land uses to the south, and Medium-Density Residential land uses to the west.

Housing Project #2

Housing Project #2 is in Berkeley's Southside neighborhood in the City Environs Properties south of the Campus Park. UC Berkeley is not subject to local zoning and general plan policies, but for informational purposes, the project site is zoned "R-3" (Multifamily Residential) with Open Space land use designation under the Berkeley General Plan. The project site is known as People's Park, with features including community gardens, lawn space, basketball court, picnic area, stage, and public restrooms. People's Park is recognized as a City of Berkeley historic landmark.

Surrounding the project site are land uses designated in the general plan as High-Density Residential to the north, east, and south, and Avenue Commercial to the west. Specifically, UC Berkeley student housing and the Anna Head Alumnae Hall are to the north, the historic First Church of Christ Scientist and the Vedanta Society are to the east, Julia Morgan's Baptist Seminary and neighborhood homes are to the south, and commercial uses, including a variety of restaurants, cafes, and retail, line Telegraph Avenue to the west.

5.10.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant land use and planning impact if it would:

² City of Berkeley, 2001. City of Berkeley General Plan Land Use Element. https://www.cityofberkeley.info/Planning_and_Development/Home/General_Plan_-_Land_Use_Element_Introduction.aspx, accessed July 29, 2020.

1. Physically divide an established community.
2. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.
3. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.10.3 IMPACT DISCUSSION

LU-1	The proposed project would not physically divide an established community.
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LRDP Update

The physical division of an established community typically refers to the construction of a physical feature (such as a wall, airport, interstate highway, or railroad tracks) or the removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community or between a community and outlying areas. It also refers to the placement of a development in such a manner that it physically divides or separates an established community.

The EIR Study Area is in an already urbanized area. As shown in Table 3-1, Proposed LRDP Update Buildout Projections, in Chapter 3, Project Description, of this Draft EIR, under the proposed LRDP Update, existing campus land uses would be modified to allow for increased residential, academic life, campus life, and parking space for the UC Berkeley population. Potential future development under the proposed LRDP Update can be realized on existing UC Berkeley properties, most of which are already developed and/or underutilized, so the majority of potential development would be infill development. The goals and principles of the proposed LRDP Update are listed in Chapter 3, Project Description. Table 3-1, Proposed LRDP Update Buildout Projections, and Table 3-2, Potential Areas of New Development and Redevelopment, do not propose specific development projects but illustrate a range of options that could be used to fulfill the goals of the proposed LRDP Update. As shown in these tables, most of the potential development under the proposed LRDP Update would be redevelopment or renovation, not new development on previously undeveloped sites. None of the potential development projects considered as part of this EIR would change the layout of existing roadways or create features that would divide established communities within the EIR Study Area. Therefore, the proposed LRDP Update would not physically divide an established community, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

The Housing Project #1 site has several existing buildings on-site and takes up one block in Downtown Berkeley. Proposed development for Housing Project #1 would therefore be infill development. It would include circulation improvements to facilitate access to and around the project site—such as reconfiguration of public on-street parking, replacement of the parking lane along Oxford Street with a Cycle Track and adequate buffer zone, and widening of sidewalks with bulb-outs to accommodate vehicle pullover and parking—but would not alter traffic patterns or hinder circulation in the project area. The

Housing Project #1 site takes up the space of one city block that is already developed and would not create new barriers to access throughout the surrounding neighborhood. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The Housing Project #2 site takes up the majority of one city block in an urbanized area. Proposed development of Housing Project #2 would result in the existing People's Park being redeveloped to include two housing buildings in addition to open space. Development of Housing Project #2 would not change surrounding roadways and would still retain over half of the project site dedicated to open space. Therefore, it would not result in impaired mobility within an existing community, and the public would still be able to utilize portions of the site. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

LU-2	The proposed project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.
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LRDP Update

The LRDP is the primary planning document for the UC Berkeley campus. The proposed LRDP Update, if approved, would become the applicable land use plan for UC Berkeley. Pursuant to the UC's constitutional autonomy, UC Berkeley is the only agency with land use jurisdiction over campus projects; because the proposed LRDP Update is the overriding planning document for UC Berkeley, the implementation of the proposed LRDP Update would not conflict with existing land use, policies, or zoning adopted for the purpose of avoiding or mitigating an environmental effect.

The land use changes evaluated in this analysis represent a reorganization and intensification of existing UC Berkeley-related uses throughout the EIR Study Area. The proposed land uses are consistent with the existing mix of land uses in the EIR Study Area, and the proposed LRDP Update would not involve the extension of the existing UC Berkeley campus boundary, so the proposed LRDP Update would not involve the potential acquisition of lands currently subject to municipal planning. Under the proposed LRDP Update, land use categories would be maintained but further refined to reflect current campus needs and functions. As listed in Table 3-1, Proposed LRDP Update Buildout Projections, in Chapter 3, Project Description, under the proposed LRDP Update, land use types would generally not change within the Campus Park, the Hill Campus West, the Hill Campus East, and the Clark Kerr Campus. The Campus Park would still support academic life, campus life, and parking; the Hill Campus West would still support residential, academic life, and campus life uses; the Hill Campus East would still support academic life and campus life; and the Clark Kerr Campus would still support residential, academic life, and campus life uses.

Because general land use in these areas would largely remain unchanged for UC Berkeley purposes, it is not anticipated that the proposed project would conflict with surrounding land uses. The City Environs

Properties would continue to support a mix of residential, academic life, campus life, and parking, but their distribution among the City Environs Properties could vary depending on the specific redevelopment and renovation projects carried out under the proposed LRDP Update. However, uses would continue to be for student and/or faculty housing, academic life, and campus life, with some parking reconfiguration to support these uses.

As described in Section 5.10.1.1, Regulatory Framework, a Memorandum of Understanding exists between the City of Berkeley and UC Berkeley that restricts development in the Clark Kerr Campus through the year 2032. The Memorandum of Understanding generally does not allow significant change in use or increase in density at the Clark Kerr Campus, with certain exceptions. As described in Chapter 3, Project Description, of this Draft EIR, development under the proposed LRDP Update could increase the residential building square footage on the Clark Kerr Campus by 491,838 square feet, the campus life square footage by 46,253 square feet, and on-site parking by 45,000 square feet, with no net change to academic life square footage. Overall, square footage is estimated to increase by 583,091 square feet. This would increase the density at the Clark Kerr Campus, but the proposed LRDP Update anticipates that this development would occur after 2032.

Potential future development that implements the proposed LRDP Update would occur on a limited number of vacant parcels and in the form of infill/intensification on sites already developed and/or underutilized, and/or in close proximity to existing development and infrastructure to maximize maintenance of open space areas within the campus. As a constitutionally created state entity, UC Berkeley is not subject to municipal regulations of surrounding local governments, such as the cities of Berkeley and Oakland general plans or land use designations, for uses on property owned or controlled by UC Berkeley that are in furtherance of its education mission. The proposed LRDP Update is generally consistent with the current LRDP and is being updated to reflect the current needs and priorities of UC Berkeley, including the provision of additional student housing and resources on the UC Berkeley campus, which would also be consistent with the intent of current Cities of Berkeley and Oakland general plan policies aimed at reducing environmental impacts. City policies support sustainable planning principles, including infill development, including housing, in close proximity to transit and the preservation of natural resources, open space, and green spaces. As previously stated, the areas of potential future development would occur primarily in PDAs and TPAs. Development in PDAs and TPAs use existing infrastructure and therefore minimize development in undeveloped areas and maximize growth in transit-rich communities, which helps lower VMT and consequently reduces GHG emissions, air quality pollutants, and noise from vehicles that use fossil fuels. Also, due to the location, infill development in PDAs results in fewer impacts to natural resources, archaeological and biological resources, energy, geology and soils, hydrology and water quality, and wildfire.

UC Berkeley's planning guidelines, including the Physical Design Framework and Strawberry Creek Management Plan, are described under Section 5.10.1.1, Regulatory Framework. They guide design of development throughout the campus, and the proposed LRDP Update plays an overarching role in guiding land use development. Future development projects under the proposed LRDP Update would go through UC Berkeley's design review process for consistency with applicable UC Berkeley plans and policies, including those adopted for the purpose of avoiding or mitigating an environmental effect, as well as adhere to UC Berkeley's CBPs.

As part of the proposed project, UC Berkeley and future development projects would implement the following land use (LU) and aesthetics (AES) CBPs. This list identifies the CBPs that have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP LU-1:** New projects in the Campus Park will, as a general rule, conform to the Physical Design Framework. The Physical Design Framework includes specific provisions to ensure projects at the city interface consider the transition from campus to city.
- **CBP LU-2 (Updated):** Each individual project built in the Hill Campus West, Hill Campus East, or the City Environs Properties under the LRDP will be assessed to determine whether it could pose potential significant land use impacts not anticipated in the LRDP, and if so, the project would be subject to further evaluation under the California Environmental Quality Act.
- **CBP AES-4 (Updated):** UC Berkeley will make informational presentations of major projects in the city environs of the Cities of Berkeley and Oakland, and the Clark Kerr Campus, to the relevant city commission(s) and board(s). Relevant commissions and boards, to be determined jointly by the Campus Architect and appropriate City Planning Director, may include the Berkeley Zoning Adjustments Board and Berkeley Landmarks Preservation Commission. Major projects in the Hill Campus East within the city of Oakland may also be presented to relevant City of Oakland boards or commissions, after consultation and mutual agreement between those agencies and UC Berkeley. Major projects may include new construction or redevelopment projects with substantial community interest as determined by UC Berkeley. Whenever a major project in the city environs or Clark Kerr Campus is under consideration, the Campus Architect may invite the appropriate city planning director or their designee to attend and comment on the project at the UC Berkeley Design Review Committee.

CBP LU-1, CBP LU-2, and CBP AES-4 establish a series of actions that UC Berkeley and future development must comply with to minimize land use impacts. The ongoing implementation of CBP LU-1, CBP LU-2, and CBP AES-4, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional land use impacts. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

The proposed LRDP Update, if adopted, would supersede the current LRDP as the applicable UC Berkeley land use plan. The UC is the only agency with jurisdiction over the approval of UC Berkeley projects. Therefore, potential future development that implements the proposed LRDP Update would not conflict with adopted plans, policies, and/or regulations set forth by the UC or UC Berkeley. The impact would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Housing Project #1 would result in a significant impact if it were to conflict with any of UC Berkeley's land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. The proposed LRDP Update has a series of goals and principles as listed in Chapter 3, Project Description of this Draft EIR. In alignment with the goals of the proposed LRDP Update, Housing Project #1 would provide additional student housing, include additional campus life space, intensify development on existing UC Berkeley property, support optimal campus organization, and help to meet space needs.

Housing Project #1 would go through UC Berkeley's review process to ensure compliance with relevant land use policies and goals.

As described in Section 5.10.1.1, Regulatory Framework, UC Berkeley is constitutionally exempt from local regulations whenever using property under its control in furtherance of its educational mission. Housing Project #1 would allow for increased student housing on existing UC Berkeley property in support of the proposed LRDP Update goals. Student housing in proximity to the Campus Park would allow for less commuting by motor vehicle, in turn minimizing traffic and associated noise, air pollutants, and greenhouse gas emissions.

Because Housing Project #1 would help to implement the goals of the proposed LRDP Update and would not conflict with other UC Berkeley plans or policies adopted for the purpose of avoiding or mitigating an environmental effect, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Like Housing Project #1, Housing Project #2 would result in a significant impact if it were to conflict with any of UC Berkeley's land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. In alignment with the goals of the proposed LRDP Update, Housing Project #2 would provide additional student and faculty housing, include additional campus life space, intensify development on existing UC Berkeley property, and help to meet UC Berkeley space needs. Housing Project #2 would go through UC Berkeley's review process to ensure compliance with relevant UC and UC Berkeley land use policies and goals. As described in Section 5.10.1.1, Regulatory Framework, UC Berkeley is constitutionally exempt from local regulations whenever using property under its control in furtherance of its educational mission. Because Housing Project #2 would help to implement the goals of the proposed LRDP Update and would not conflict with other UC Berkeley plans or policies adopted specifically for the purpose of avoiding or mitigating an environmental effect, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

LUP-3	The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less-than-significant cumulative impact with respect to land use and planning.
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LRDP Update

The cumulative setting is described in Chapter 5, Environmental Analysis. For land use and planning, the geographic context for cumulative impacts is projected growth in the rest of the cities of Berkeley and Oakland and in the surrounding region as forecast by ABAG. The proposed project would result in significant cumulative land use impacts with past, present, or reasonably foreseeable projects if it, in combination with these projects, resulted in physical division of an established community or conflicts with applicable land use plans, policies, or regulations. Private-sector projects on land not owned by UC Berkeley

within the cumulative setting would be subject to separate environmental review as well as local policies, such as the relevant City planning and zoning policies in Section 5.10.1.1, Regulatory Framework. Projects under the Lawrence Berkeley National Laboratory would be subject to compliance with the Lawrence Berkeley National Laboratory's LRDP.

Compliance with relevant UC Berkeley or local land use policies would minimize the potential for impacts with respect to land use and planning. In addition, redevelopment and intensification of land uses within TPAs and PDAs from the proposed project and other projects in the cumulative setting of Berkeley and the surrounding Bay Area region, complies with Plan Bay Area for increased development within these areas. Furthermore, the EIR Study Area and the surrounding region is largely urbanized, in which case many projects in the area, though not all, would not result in major land use changes.

Cumulative projects included in Chapter 5, Environmental Analysis, do not include projects that would result in division of an existing neighborhood or community. Table 5-2, Pending Projects in the City of Berkeley, lists development of individual buildings in already built areas; it does not include any that would construct a physical feature, such as a highway or railroad, or remove a means of access, such as a local road or bridge, that would result in dividing an established community. In addition, all other cumulative development has been, or will be, subject to development guidance in a general plan, prescribed by zoning, and subject to other applicable land use plans to avoid conflicting with plans adopted to avoid or mitigate environmental effects. Accordingly, because the proposed project would not, in combination with other projects, result in physical division of an established community or conflicts with applicable land use plans, policies, or regulations, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

Housing Projects #1 and #2 are included in the cumulative setting for the proposed LRDP Update. Therefore, their impacts are incorporated into the cumulative impact analysis of the proposed LRDP Update.

Significance without Mitigation: Less than significant.

5.11 NOISE

This chapter describes the potential noise and vibration impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential noise and vibration impacts, and identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures, if any, that could mitigate any potentially significant impacts.

Noise modeling data is included as Appendix J, Noise Data, of this draft environmental impact report (Draft EIR).

5.11.1 ENVIRONMENTAL SETTING

5.11.1.1 GLOSSARY

The following are brief definitions of terminology used in this section:

- **Sound.** A disturbance created by a vibrating object, which when transmitted by pressure waves through a medium such as air, is capable of being detected by the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB).** A measure of sound on a logarithmic scale.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent Continuous Noise Level (L_{eq}).** The mean of the noise level, energy averaged over the measurement period.
- **L_{max} .** The maximum noise level during a measurement period.
- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period). This is also called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often called the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."
- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels during a 24-hour period, with 10 dB added from 10:00 p.m. to 7:00 a.m.

- **Community Noise Equivalent Level (CNEL).** The energy-average of the A-weighted sound levels during a 24-hour period, with 5 dB added from 7:00 p.m. to 10:00 p.m. and 10 dB added from 10:00 p.m. to 7:00 a.m. Note: For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered equivalent/interchangeable.
- **Peak Particle Velocity (PPV).** The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.
- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.
- **Vibration Decibel (VdB).** A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is one microinch per second (1×10^{-6} in/sec).

5.11.1.2 SOUND FUNDAMENTALS

Sound is described in terms of loudness or amplitude (decibels), frequency or pitch (Hertz [Hz] or cycles per second), and duration (seconds or minutes). The standard unit of measurement of the loudness of sound is the decibel (dB). Changes of 1 to 3 dBA are detectable under quiet, controlled conditions, and changes of less than 1 dBA are usually indiscernible. A 3 dBA change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dBA is readily discernable to most people in an exterior environment, and a 10 dBA change is perceived as a doubling (or halving) of the sound.

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all but are “felt” more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz. Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is usually used to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by weighting frequencies in a manner approximating the sensitivity of the human ear.

Noise is known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Because of these effects, the federal government, the State of California, and many local governments have established criteria to protect public health and safety and to prevent disruption of certain human activities.

Sound Measurement

The A-weighted noise level deemphasizes low and very high frequencies of sound similar to the human ear’s deemphasis of these frequencies. Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, as points on a sharply rising curve. An increase of 10 dBA is 10 times more intense than 1 dBA, 20 dBA is 100 times more intense, and 30 dBA is 1,000 times more intense. This system of measuring

sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud).

Sound is generated from a source, and sound levels decrease as distance from the source increases. Sound dissipates exponentially with distance from the source, and this is called “spreading loss.” For a single-point source, sound levels decrease by approximately 6 dBA for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dBA for each doubling of distance in a hard-site environment. Line source noise in a relatively flat environment with absorptive vegetation decreases by 4.5 dBA for each doubling of distance.

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, L_{50} represents the noise level that is exceeded 50 percent of the time or 30 minutes in an hour. The L_2 , L_8 , and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time, or 1, 5, and 15 minutes per hour. These “ L_n ” values are typically used to demonstrate compliance of stationary noise sources with a city’s noise ordinance, as discussed below. Other values typically noted during a noise survey are the L_{min} and L_{max} . These are the minimum and maximum root-mean-square noise levels obtained over the measurement period.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law requires that an artificial dBA increment be added to quiet time noise levels—hence the CNEL or L_{dn} (see “Glossary”). Both descriptors give roughly the same 24-hour level (i.e., typically within 1 dBA of each other), with the CNEL being only slightly more restrictive (i.e., higher), and they are used interchangeably in this assessment.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA, but exposure to high noise levels affects all human body systems. Prolonged noise exposure in excess of 75 dBA increases body tensions, which affects blood pressure, heart functions, and the nervous system. Extended periods of noise exposure above 90 dBA can result in permanent hearing damage. A sound level of 120 dBA causes a tickling sensation in the human ear, called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation becomes painful, and this is called the threshold of pain. Table 5.11-1, Typical Noise Levels, shows typical noise levels from familiar noise sources.

TABLE 5.11-1 TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet	100	
Gas Lawn Mower at three feet	90	
Diesel Truck at 50 feet, at 50 mph	80	Food Blender at 3 feet Garbage Disposal at 3 feet
Noisy Urban Area, Daytime	70	Vacuum Cleaner at 10 feet Normal speech at 3 feet
Commercial Area	60	
Heavy Traffic at 300 feet		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime	30	Library
Quiet Rural Nighttime	20	Bedroom at Night, Concert Hall (background)
	10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation, 2013. Technical Noise Supplement ("TeNS").

5.11.1.3 VIBRATION FUNDAMENTALS

Vibration is an oscillating motion in the earth. Like sound, vibration is transmitted in waves and is described in terms of amplitude and frequency, but in this case through the earth or solid objects. Unlike noise, vibration is typically of a frequency that is felt rather than heard. The way in which vibration is transmitted through the earth is called propagation. As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

Vibration Measurement

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV, measured in inches per second, is the maximum instantaneous peak of the vibration signal, and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage, and RMS (measured in VdB) is typically more suitable for evaluating human response.

Effects of Vibration

Vibration can cause adverse effects on humans and, if vibration levels are high enough, it can cause architectural damage to buildings (e.g., cosmetic damage to plaster). As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 5.11-2, Human Reaction to Typical Vibration Levels, presents the typical human response at various vibration levels.

TABLE 5.11-2 HUMAN REACTION TO TYPICAL VIBRATION LEVELS

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many humans.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level annoying.
85 VdB	Vibration tolerable only if there are an infrequent number of events per day.

Source: Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment.

5.11.1.4 REGULATORY FRAMEWORK

To limit population exposure to physically and/or psychologically damaging, as well as intrusive noise levels, the federal government, the State of California, and local governments have established standards and ordinances to control noise. UC Berkeley has also adopted principles and programs to reduce excessive noise.

Federal

United States Environmental Protection Agency

The United States Environmental Protection Agency (USEPA) has identified the relationship between noise levels and human response. The USEPA has determined that over a 24-hour period, exposure to an L_{eq} of 70 dBA will result in some hearing loss. Interference with activity and annoyance will not occur if exterior levels are maintained at a L_{eq} of 55 dBA and interior levels at or below 45 dBA. While these levels are relevant for planning and design and useful for informational purposes, they are not land use planning criteria because

they do not consider economic cost, technical feasibility, or the needs of the community; therefore, they are not mandated.

The USEPA has also set 55 dBA L_{dn} as the basic goal for exterior residential noise intrusion. However, other federal agencies, in consideration of their own program requirements and goals, as well as difficulty of actually achieving a goal of 55 dBA L_{dn} , have settled on the 65 dBA L_{dn} level as their standard. At 65 dBA L_{dn} , activity interference is kept to a minimum, and annoyance levels are still low. It is also a level that can realistically be achieved.

Occupational Health and Safety Administration

The federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the USEPA. Such limitations apply to the operation of construction equipment and to proposed industrial land uses. Noise exposure of this type is dependent on work conditions and is addressed through a facility's health and safety plan, as required under OSHA, and is therefore not addressed further in this analysis.

State

General Plan Guidelines

The State of California, through its General Plan Guidelines, provides guidance on how ambient noise should influence land use and development decisions and includes a table of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable uses at different noise levels, expressed in CNEL. A conditionally acceptable designation implies new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use and needed noise insulation features are incorporated in the design. A normally acceptable designation indicates that standard construction requires no special noise reductions. The General Plan Guidelines provide cities with recommended community noise and land use compatibility standards that can be adopted or modified at the local level based on conditions and types of land uses specific to that jurisdiction.

California Building Code

The California Building Code is Title 24 of the California Code of Regulations. The California Building Code Part 2, Volume 1, Chapter 12, Section 1207.11.2, Allowable Interior Noise Levels, requires that interior noise levels attributable to exterior sources not exceed 45 dB in any habitable room. The noise metric is evaluated as either the L_{dn} or the CNEL, consistent with the noise element of the local general plan and the proposed LRDP Update.

CALGreen

The State of California's noise insulation standards for nonresidential uses are codified in the California Code of Regulations, Title 24, Part 11, California Green Building Standards Code (CALGreen). CALGreen noise standards are applied to new or renovation construction projects in California to control interior

noise levels resulting from exterior noise sources. Proposed projects may use either the prescriptive method (Section 5.507.4.1) or the performance method (Section 5.507.4.2) to show compliance. Under the prescriptive method, a project must demonstrate transmission loss ratings for the wall and roof-ceiling assemblies and exterior windows when located within a noise environment of 65 dBA CNEL or higher. Under the performance method, a project must demonstrate that interior noise levels do not exceed 50 dBA $L_{eq(1hr)}$.

University of California

UC Berkeley is not required to comply with local regulations and standards for noise. However, for the purposes of CEQA, UC Berkeley uses noise standards from the municipal code from the city where the noise-sensitive receptor is located. The City of Berkeley and the City of Oakland noise standards are described below under the subheading “Local,” and will be used for thresholds of significance determination.

Office of Environment Health and Safety Programs

UC Berkeley’s Office of Environment, Health & Safety works with UC Berkeley construction project teams to implement noise reduction measures and performs noise monitoring at specific sites upon request.

Capital Strategies Communications

UC Berkeley has a construction project communication program to communicate with its affiliates, the public, and neighbors about forthcoming or ongoing construction projects. Under the program, Capital Strategies Communications (CSC) engages in a range of steps to ensure responsive communications.

CSC reviews site utilization and staging plans early on to reduce the impacts of construction equipment and circulation on UC Berkeley affiliates and neighbors. CSC then coordinates project goals, scope, and timeline for effective communications, followed by the distribution of flyers and emails to those affected to communicate construction project specifics, e.g., hours of work, dates of construction, expected impacts, and contact information. During demolition, site preparation, and construction, CSC sends construction communications on a regular basis; sends special notices in advance when unusual episodes of noise are expected; provides project information for inclusion in UC Berkeley publications; and responds to, and maintains records of, all complaints.

CSC coordinates with city staff to communicate and lessen impacts, coordinates complaint responses with the Office of Environment, Health & Safety, and participates in campuswide efforts to reduce instances of construction impacts on the UC Berkeley community and its neighbors.

Advisory Council on Student-Neighbor Relations

Convened in 2005, the Advisory Council on Student-Neighbor Relations (SNAC) is dedicated to improving the quality of life in the neighborhoods adjacent to UC Berkeley properties within the EIR Study Area. Focused on facilitating communication, mutual respect, and cooperation between UC Berkeley students and city of Berkeley residents, SNAC’s primary aim is to build good student/neighbor relations.

Since its inception, SNAC has launched and supported good-neighbor initiatives, campaigns and programs—such as Happy Neighbors and the CalGreeks Alcohol Taskforce—to engage and serve students and neighbors. Historically, SNAC members have represented students, neighborhood and merchant organizations, UC Berkeley and City of Berkeley staff, and other community groups. Noise reduction initiatives focus on but are not limited to parties, sports, and rental spaces. The CalGreeks Alcohol Taskforce provides noise data from CalGreeks events. Happy Neighbors educates students and their neighbors about community expectations, relevant policies and laws, and police and student conduct procedures for possible alcohol, party, and noise violations.

SNAC meets regularly. During those meetings, UC Berkeley and community stakeholders have an opportunity to hear updates of work conducted in partnership with UC Berkeley and city and community leaders and consider new opportunities for collaboration.

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance. UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues. Relevant sections of the Campus Design Standards are listed below:

Section 01 14 00: Work Restrictions

- a. The Work of this Project shall be accomplished in accordance with the City of Berkeley's Construction Noise Standards (see Local regulations below).
- b. No work shall be performed on Saturdays, Sundays or UC Berkeley holidays, unless otherwise approved by the Owner's Representative, in consultation with the Campus Building Department.
- c. Work occurring during RRR¹ or Finals Week shall not start before 9:00 a.m. unless otherwise approved in advance.
- d. All roto-hammering, chipping, doweling, pneumatic fastening, or any other activity that may cause excessive noise and or vibration in central campus environs or occurring near residences shall be performed in a manner that causes the least possible disturbance to campus activities or residents.
- f. All crane work shall be scheduled to cause the least possible disruption to the campus and surrounding environs.

¹ Reading, Review, and Recitation (RRR) Week is the week following the end of formal class instruction and preceding the start of final exams and is intended for students to have free time to prepare for exams, to work on final papers and projects, and to participate in review sessions and meetings with instructors.

- g. Alterations to the above contract requirements may be made in advance, with the written permission of the Campus Building Official or Campus Architect.

Section 01 56 19: Temporary Noise Barriers

1. The following noise control procedures shall be employed (these requirements may be modified for projects as required by Environmental Impact Report Mitigation Measures where needed):
 - a. Maximum Noise: The Contractor shall use equipment and methods during the course of this Work that are least disruptive to adjacent buildings, office, or residents. Note: Modify the following, of necessary for EIR Mitigation Measures (if any). Noise levels for trenchers, graders, trucks and pile drivers shall not exceed 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.
 - b. Equipment: Jack hammers shall be equipped with exhaust mufflers and steel muffling sleeves. All diesel equipment shall have exhaust muffled. Air compressors shall be of a quiet type such as a “whisperized” compressor.
 - c. Operations: Machines shall not be left idling. Electric power shall be used in lieu of internal combustion engine power wherever possible. Equipment shall be maintained to reduce noise from vibration, faulty mufflers, or other sources.
 - d. Scheduling: Noisy operations shall be scheduled so as to minimize their disturbance to occupied adjacent areas and duration at any given location.

Section 01 71 33: Protection of Adjacent Construction

3. Noise and Dust Control²
 - a. The Contractor shall note that the building and adjacent facilities shall remain in operation during the entire construction period, and shall take all reasonable precautions to eliminate dust and minimize noise.
 - b. The Contractor shall erect temporary partitions to confine noise and dust as required.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to noise and vibration as part of the project approval process. As part of the proposed LRPD Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.11.3, Impact Discussion.

² For impacts related to fugitive dust from construction activities, see Chapter 5.2, Air Quality, of this Draft EIR.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the Cities of Berkeley and Oakland related to noise and vibration that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

City of Berkeley

General Plan Environmental Management Element

The environmental management element contains noise-related objectives, policies, and actions. The following could be relevant to the EIR Study Area.

Objective 8: Protect the community from excessive noise levels.

- Policy EM-43 Noise Reduction: Reduce significant noise levels and minimize new sources of noise.
 - Action: Increase enforcement of the Noise Ordinance to reduce noise impacts.
 - Action: Promote increased public awareness concerning the negative effects of excessive noise on humans.
- Policy EM-44 Noise Prevention and Elimination: Protect public health and welfare by eliminating existing noise problems where feasible and by preventing significant future degradation of the acoustic environment.
 - Action: Incorporate noise considerations into land use planning decisions.
 - Action: Ensure the effective enforcement of City, State, and Federal noise levels by appropriate City departments.
- Policy EM-45 Traffic Noise: Work with local and regional agencies to reduce local and regional traffic, which is the single largest source of unacceptable noise in the city.
 - Action: Encourage neighborhood traffic calming strategies that cause motorists to slow down and decrease noise levels in all residential areas.
 - Action: Minimize potential transportation noise through proper design of street circulation, coordination of routing, and other traffic control measures.
 - Action: Promote and encourage new vehicle technologies to reduce transportation noise levels.
 - Action: Establish noise emission limits on City public works projects and vehicles, such as refuse collection trucks, and work with other large institutions in the city, such as BUSD, to reduce vehicle noise emissions.
- Policy EM-46 Noise Mitigation: Require operational limitations and all feasible noise buffering for new uses that generate significant noise impacts near residential, institutional, or recreational uses.

- Action: Promote use of noise insulation materials in new construction and major rehabilitation.
- Action: Mitigate significant noise impacts on parks and public open space, whenever feasible.
- Policy EM-47 Land Use Compatibility: Ensure that noise-sensitive uses, including, but not limited to, residences, child-care centers, hospitals, and nursing homes, are protected from detrimental noise levels.
 - Action: Noise-sensitive development proposals should be reviewed with respect to the Land Use Compatibility Guidelines (shown in Table 5.11-3, City of Berkeley Land Use Compatibility for Community Noise Environments)

If the noise level is within the “normally acceptable” level, noise exposure would be acceptable for the intended land use. Development may occur without requiring an evaluation of the noise environment unless the use could generate noise impacts on adjacent uses.

If the noise level is within the “conditionally acceptable” level, noise exposure would be conditionally acceptable; a specified land use may be permitted only after detailed analysis of the noise environment and the project characteristics to determine whether noise insulation or protection features are required. Such noise insulation features may include measures to protect noise-sensitive outdoor activity areas (e.g., at residences, schools, or parks) or may include building sound insulation treatments, such as sound-rated windows to protect interior spaces in sensitive receptors.

If the noise level is within the “normally unacceptable” level, analysis and mitigation are required. Development should generally not be undertaken unless adequate noise mitigation options have been analyzed and appropriate mitigations incorporated into the project to reduce the exposure of people to unacceptable noise levels.

If the noise level is within the “clearly unacceptable” level, new construction or development should not be undertaken unless all feasible noise mitigation options have been analyzed and appropriate mitigations incorporated into the project to reduce the exposure of people to unacceptable noise levels.

Municipal Code

The City of Berkeley’s noise standards are in its municipal code Chapter 13.40, Community Noise. Standards applicable to the proposed LRDP Update and to Housing Projects #1 and #2 are discussed in this section.

Stationary noise sources in Berkeley are regulated by Section 13.40.050, Exterior Noise Standards, of the municipal code. The City of Berkeley’s exterior noise limits are based on zoning and time of day and summarized in Table 5.11-4, Exterior Noise Limits: City of Berkeley.

TABLE 5.11-3 CITY OF BERKELEY LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

Land Uses	CNEL (dBA)					
	55	60	65	70	75	80
Residential – Low Density Single-Family, Duplex, Mobile Homes						
Residential – Multiple-Family						
Transient Lodging, Motels, Hotels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Businesses, Commercial and Professional						
Industrial, Manufacturing, Utilities, Agricultural						
	Normally Acceptable: Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.					
	Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.					
	Normally Unacceptable: New construction or development should generally be discouraged. If new construction does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.					
	Clearly Unacceptable: New construction or development generally should not be undertaken.					

Source: City of Berkeley General Plan.

TABLE 5.11-4 EXTERIOR NOISE LIMITS: CITY OF BERKELEY

Zoning District	Time Period	L ₅₀ Noise Level dBA	L ₂₅ Noise Level dBA	L ₈ Noise Level dBA	L ₂ Noise Level dBA
R-1, R-2, R-1A, R-2A, and ESR	7:00 a.m. to 10:00 p.m.	55	60	65	70
	10:00 p.m. to 7:00 a.m.	45	50	55	60
R-3 and above	7:00 a.m. to 10:00 p.m.	60	65	70	75
	10:00 p.m. to 7:00 a.m.	55	60	65	70
Commercial	7:00 a.m. to 10:00 p.m.	65	70	75	80
	10:00 p.m. to 7:00 a.m.	60	65	70	75
Industrial	Anytime	70	75	80	85

Notes: If the measured ambient noise level is greater than the level permissible within any of the noise limit categories above, the sound level when measured on any other property shall not exceed:

- The ambient noise level for a cumulative period of more than 30 minutes in any hour (L₅₀); or
- The ambient noise level plus 5 dBA for a cumulative period of more than 15 minutes in any hour (L₂₅); or
- The ambient noise level plus 10 dBA for a cumulative period of more than 5 minutes in any hour (L₈); or
- The ambient noise level plus 15 dBA for a cumulative period of more than 1 minute in any hour (L₂); or
- The ambient noise level plus 20 dBA for any period of time (L_{max}).

If the measurement location is on a boundary between two different zones, the noise limit applicable to the quieter zone shall apply.

Source: City of Berkeley Municipal Code.

Section 13.40.070, Prohibited Acts, describes various restricted or entirely prohibited activities that generate undesired noise. Applicable prohibited acts are as follows:

- **Loudspeakers (Amplified Sound) Not Associated With an Event:** Using or operating for any purpose any loudspeaker, loudspeaker system, or similar device, such that the sound therefrom violates the provisions of Section 13.40.050, Exterior Noise Standards, or Section 13.40.060, Interior Noise Standards, except for sound levels for which a variance or permit has been issued by the EHD.
- **Loading and Unloading:** Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, or similar objects between the hours of 10:00 p.m. and 7:00 a.m. such that the sound therefrom across a residential real property line violates the provisions of Section 13.40.050, Exterior Noise Standards, or Section 13.40.060, Interior Noise Standards.
- **Construction/Demolition:** Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition 7:00 p.m. to 7:00 a.m. on weekdays and 8:00 p.m. to 9:00 a.m. on weekends or holidays such that the sound therefrom across a residential or commercial real property line violates standards set forth in Section 13.40.050, Exterior Noise Standards, or Section 13.40.060, Interior Noise Standards, except for emergency work of public service utilities or by variance issued by the EHD, is prohibited. (This shall not apply to the use of domestic power tools.)
- **Places of Public Entertainment:** Operating or permitting the operation or playing of any loudspeaker, musical instrument, motorized racing vehicle, or other source of sound in any place of public entertainment that exceeds 95 dBA as read on the scale of a sound level meter at any point normally

occupied by a customer, without a conspicuous and legible sign stating “Warning Sound Levels Within May Cause Hearing Impairment” is prohibited.

- **Noise Restrictions at Affected Properties:** Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum sound levels at affected properties will not exceed those listed in Table 5.11-5, Maximum Construction Noise Levels (dBA L_{max}): City of Berkeley.

TABLE 5.11-5 MAXIMUM CONSTRUCTION NOISE LEVELS (dBA L_{max}): CITY OF BERKELEY

Duration	Land Use	Weekdays 7:00 a.m. to 7:00 p.m.	Weekends & Legal Holidays 9:00 a.m. to 8:00 p.m.
Short-term (less than 10 days)	Residential, R-1, R-2	75	60
	Multi-family Residential, R-3 and above	80	65
	Commercial/Industrial	85	70
Long term (10 days or more)	Residential, R-1, R-2	60	50
	Multi-family Residential, R-3 and above	65	55
	Commercial/Industrial	70	60

Source: City of Berkeley Municipal Code Section 13.40.070, Prohibited Acts.

Vibration

Vibration that annoys or disturbs at least two or more reasonable persons of normal sensitiveness who reside in separate residences (including apartments and condominiums) at or beyond the property boundary of the (vibration) source if on private property, or at least 150 feet from the (vibration) source if on a public space or public right-of-way, is prohibited by the City of Berkeley Municipal Code.

However, the City of Berkeley municipal code does not provide a quantified vibration threshold. Therefore, for the purposes of this evaluation, criteria provided by the Federal Transit Administration (FTA) are used and are summarized under Section 5.11.2, Standards of Significance.

City of Oakland

The City of Oakland exterior noise standards from Section 17.120.050(A), Noise (Residential Zone Noise Level Standards), of the City of Oakland Municipal Code are summarized in Table 5.11-6, Maximum Allowable Noise Level Standards (dBA): City of Oakland, and are applicable to sensitive receptors adjacent to the EIR Study Area and within the Oakland city limits. Maximum allowable construction noise levels are summarized in Table 5.11-7, Maximum Construction Noise Levels (dBA L_{max}): City of Oakland.

TABLE 5.11-6 MAXIMUM ALLOWABLE NOISE LEVEL STANDARDS (dBA): CITY OF OAKLAND

Zoning	Time Period	L ₃₃	L ₁₇	L ₈	L ₂	L _{max}
Residential and Civic	7:00 a.m. to 10:00 p.m.	60	65	70	75	80
	10:00 p.m. to 7:00 p.m.	45	50	55	60	65
Commercial Zone	Anytime	65	70	75	80	85
Industrial Zone	Anytime	70	75	80	85	90

Notes: In the event the measured ambient noise level exceeds the applicable noise level standard in any category above, the stated applicable noise level shall be adjusted so as to equal the ambient noise level.

Each of the noise standards shall be reduced by 5 dBA for a simple tone noise such as whine, screech, hum, noise consisting primarily of speech or music, or for recurring impulse noise such as hammering or riveting.

Source: City of Oakland Municipal Code.

TABLE 5.11-7 MAXIMUM CONSTRUCTION NOISE LEVELS (dBA L_{MAX}): CITY OF OAKLAND

Duration	Land Use	Weekdays	Weekends & Federal Holidays
		7:00 a.m. to 7:00 p.m.	9:00 a.m. to 8:00 p.m.
Short-Term (less than 10 days)	Residential	80	65
	Commercial, Industrial	85	70
Long-term (10 days or more)	Residential	65	55
	Commercial, Industrial	70	60

Notes: The nighttime noise levels received by any land use and produced by any construction or demolition activity between weekday hour of 7:00 p.m. and 7:00 a.m. or between 8:00 p.m. and 9:00 a.m. on weekends and federal holidays shall not exceed the applicable nighttime noise levels standards (see Table 5.11-6, Maximum Allowable Noise Level Standards (dBA): City of Oakland).

Source: City of Oakland Municipal Code.

5.11.1.5 EXISTING CONDITIONS

Existing noise and vibration conditions are discussed below for the proposed LRDP Update, Housing Project #1, and Housing Project #2. Nearby sensitive receptors are discussed for each component of the proposed project. Sensitive noise receptors include residences, senior housing, schools, hospitals, libraries, places of worship, and recreational areas. These uses are regarded as sensitive because they are where people most frequently engage in activities which are likely to be disturbed by noise, such as reading, studying, sleeping, resting, working from home, or quiet or passive recreation. Commercial and industrial uses are not particularly sensitive to noise or vibration.

LRDP Update

Sensitive Receptors

Receptors that are sensitive to noise in the EIR Study Area include residential uses (including student housing), academic uses such as classrooms, laboratories, libraries, places of worship, and parks. These areas are noise sensitive because they are spaces reserved for learning/instruction, worshiping, sleeping, and recreation.

Existing Traffic Noise

Traffic noise levels were estimated using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model and traffic data provided by Fehr & Peers included in Appendix M, Transportation Data, of this Draft EIR. The FHWA model predicts noise levels through a series of adjustments to a reference sound level. These adjustments account for distances from the roadway, traffic volumes, vehicle speeds, car/truck mix, number of lanes, and road width. Table 5.11-8, Existing Traffic Noise: EIR Study Area, shows the existing noise levels in the EIR Study Area study roadway segments.

TABLE 5.11-8 EXISTING TRAFFIC NOISE: EIR STUDY AREA

Roadway Segment	Existing Average Daily Trips	Existing L _{dn} (dBA) at 50 Feet
Addison Street - Shattuck Avenue to Oxford Street	1,870	55.0
Adeline Street - Ashby Avenue to Martin Luther King Junior Way	15,560	62.8
Adeline Street - south of Alcatraz Avenue	43,230	67.9
Adeline Street - Ward Street to Oregon Street	17,670	64.9
Alcatraz Avenue - west of Adeline Street	14,900	62.4
Alcatraz Avenue - west of College Avenue	10,540	63.5
Ashby Avenue - east of Adeline Street	18,360	63.9
Ashby Avenue - west of San Pablo Avenue	22,660	67.0
Bancroft Way - College Avenue to Piedmont Avenue	3,000	61.2
Bancroft Way - Bowditch Street to College Avenue	4,650	63.4
Bancroft Way - Telegraph Avenue to Bowditch Street	5,910	65.2
Bancroft Way - Dana Street to Telegraph Avenue	11,600	66.6
Bancroft Way - Ellsworth Street to Fulton Street	10,690	65.4
Bancroft Way - Shattuck Avenue to Fulton Street	4,250	60.7
Berkeley Way - Shattuck Avenue to Fulton Street	1,230	55.6
Bowditch Street - south of Bancroft Way	2,240	55.6
Bowditch Street - south of Haste Street	2,980	58.0
Cedar Street - Shattuck Avenue to Milvia Street	7,540	57.8
Center Street - west of Oxford Street	1,300	54.5
Channing Way - east of Shattuck Avenue	5,690	60.9
Claremont Avenue - north of Alcatraz Avenue	13,840	64.8
Claremont Boulevard - north of Russel Street	18,090	65.9
College Avenue - south of Alcatraz Avenue	11,170	63.8
College Avenue - south of Bancroft Way	3,060	56.6
Dana Street - south of Bancroft Way	2,090	55.9
Durant Avenue - east of Shattuck Avenue	2,900	58.0
Dwight Way - east of Seventh Street	3,000	57.0
Dwight Way - east of Telegraph Street	5,650	60.8
Dwight Way - west of Telegraph Street	12,820	64.4
Ellsworth Street - south of Bancroft Way	2,440	54.7
Euclid Avenue - north of Hearst Avenue	2,700	58.5
Fulton Street - south of Bancroft Way	11,720	64.0
Gayley Road - north of University Drive	13,120	64.6
Gayley Road - Stadium Rim Way to University Drive	13,250	64.6
Gilman Street - Between Peralta Ave and Ordway St	11,640	59.5
Grizzly Peak Boulevard - north of Euclid Avenue	2,840	52.5

TABLE 5.11-8 EXISTING TRAFFIC NOISE: EIR STUDY AREA

Roadway Segment	Existing Average Daily Trips	Existing L _{dn} (dBA) at 50 Feet
Haste Street - Bowditch Street to Telegraph Avenue	6,040	61.1
Hearst Avenue - east of Shattuck Avenue	8,860	58.6
Hearst Avenue - west of Arch Street	12,100	64.1
Hearst Avenue - Euclid Avenue to Scenic Avenue	10,310	65.9
Hearst Avenue - east of Le Roy Avenue	9,440	65.4
I 580 NB On-Ramp - north of Gilman Street	9,920	72.7
I 580 SB Off-Ramp - north of Gilman Street	11,000	71.7
Kittredge Street - Shattuck Avenue to Fulton Street	2,980	55.1
La Loma Avenue - north of Hearst Avenue	7,250	61.9
Le Roy Avenue - north of Hearst Avenue	1,240	52.6
Martin Luther King Jr Way - Allston Way to Bancroft Way	23,860	67.1
Martin Luther King Jr Way - north of University Avenue	23,360	67.1
Oxford Street - north of Cedar Street	9,070	58.3
Oxford Street - north of Hearst Avenue	12,390	64.2
Oxford Street - north of Berkeley Way	15,690	66.7
Oxford Street - south of Center Street	19,220	66.5
Oxford Street - north of University Avenue	16,410	67.7
Piedmont Avenue - Bancroft Way to Durant Avenue	11,630	63.3
Piedmont Avenue - Bancroft Way to Optometry Lane	12,150	64.1
Sacramento St - South of Hopkins Street	11,800	60.7
San Pablo Avenue - Gilman Street to Monroe Street	25,650	68.7
San Pablo Avenue - Delaware Street to Hearst Avenue	22,810	68.3
San Pablo Avenue - north of Ashby Avenue	23,790	68.4
San Pablo Avenue - south of Ashby Avenue	28,710	69.3
Scenic Avenue - north of Hearst Avenue	2,100	52.6
Seventh Street - south of Dwight Way	8,410	61.9
Shattuck Avenue - Allston Way to Kittredge Street	19,690	66.7
Shattuck Avenue - Derby Street to Ward Street	31,960	66.6
Shattuck Avenue - Durant Avenue to Channing Way	22,230	66.9
Shattuck Avenue - Hearst Avenue to University Avenue	14,340	63.7
Shattuck Avenue - University Avenue to Addison Street	18,180	64.6
Sixth Street - Hearst Avenue to University Avenue	14,810	63.5
Sixth Street - University Avenue to Bancroft Way	15,360	63.0
Stadium Rim Way - east of Piedmont Avenue	4,420	62.0
Telegraph Avenue - north of Dwight Way	7,110	61.8
Telegraph Avenue - south of Bancroft Way	5,700	60.0
Telegraph Avenue - south of Derby Street	16,380	66.2
University Avenue - east of Martin Luther King Jr.	18,150	66.0
University Avenue - east of San Pablo Avenue	25,520	66.0
University Avenue - Shattuck Avenue to Oxford Street	8,020	64.8
University Avenue - Sixth Street to San Pablo Avenue	29,750	68.3
University Avenue - west of Shattuck Avenue	15,030	64.7
Warring Street - north of Derby Street	15,870	61.8

Source: Federal Highway Administration's traffic noise prediction modeling using roadway volumes, vehicle mix, time of day percentage splits, number of lanes, and speeds provided by Fehr & Peers, 2020.

Rail/BART Noise

The Bay Area Rapid Transit (BART) is the predominant source of rail noise in the EIR Study Area. In addition to BART, the 1608 4th Street UC Berkeley property is adjacent to the Union Pacific rail line, which services freight (including BNSF) and commuter rail such the Amtrak and Capitol Corridor. When trains approach a passenger station or at-grade crossing, they are required to sound their warning whistle within a quarter mile. Train warning whistles typically generate maximum noise levels of 105 to 110 dBA at 100 feet. The day-night average noise level at locations immediately adjacent to at-grade crossings and exposed to multiple train pass-by events per day can exceed 85 dBA Ldn/CNEL.

The nearest BART station to the UC Berkeley campus is Downtown Berkeley Station on the corner of Center Street and Shattuck Avenue, approximately 675 feet west of the Campus Park. The station is located underground. Therefore, BART noise is heavily shielded from pedestrians and aboveground receptors in this area.

Stationary Noise

Stationary noise sources may occur at all types of land uses within the EIR Study Area. Residential uses generate noise from landscaping, maintenance activities, and heating, ventilation, air conditioning (HVAC) systems. Commercial and retail uses generate noise from HVAC systems, loading docks, and other sources. Noise generated by residential, commercial, and retail uses are generally short-lived and intermittent. Nightclubs, outdoor dining areas, gas stations, car washes, fire stations, drive-throughs, swimming pool and hot tub mechanical equipment, parks, and outdoor recreation from athletic and music events are other common noise sources.

Vibration and Rail

Existing sources of operational vibration in the EIR Study Area include vehicle traffic on roadways, BART, and the Union Pacific rail line in West Berkeley. The California Department of Transportation (Caltrans) has studied the effects of propagation of vehicle vibration on sensitive land uses and notes that “heavy trucks, and quite frequently buses, generate the highest earthborne vibrations of normal traffic.” Caltrans further notes that the highest traffic-generated vibrations are along freeways and state routes. The Caltrans study finds that “vibrations measured on freeway shoulders (five meters from the centerline of the nearest lane) have never exceeded 0.08 inches per second, with the worst combinations of heavy trucks and poor roadway conditions (while such trucks were moving at freeway speeds). This level coincides with the maximum recommended safe level for ruins and ancient monuments (and historic buildings).”³ As stated above, the nearest BART station to the Campus Park provides access to rapid transit that is underground, and vibration to aboveground receptors would typically be insignificant. In addition, potential future sensitive receptors at the 1608 4th Street UC Berkeley property could be placed within close proximity to the existing Union Pacific railroad line.

³ Caltrans, 2013, Transportation and Construction Vibration Guidance Manual.

Housing Project #1

Sensitive Receptors

Housing Project #1 is bounded by Berkeley Way to the north, Oxford Street to the east, University Avenue to the south, and Walnut Street to the west. Nearby receptors that are sensitive to noise and vibration because they are spaces reserved for learning/instruction and sleeping include:

- **North.** Academic and Residential Uses: UC Berkeley Innovative Genomics Institute and multi-story residences
- **East.** Academic Uses: Li Ka Sing Center for Biomedical and Health Sciences
- **South.** Academic Uses: UC Berkeley Sheldon Margen Public Health Library, University Hall, and Academic Talent Development Program
- **West.** Residential Uses: Existing and future multi-story residences (Modera Acheson Commons under construction)

There are no nearby historic buildings or structures that would be subject to potential vibration damage during construction of Housing Project #1. Other nearby sensitive receptors are learning facilities and housing (see Figure 5.11-1, Nearby Noise and Vibration-Sensitive Receptors: Housing Project #1).

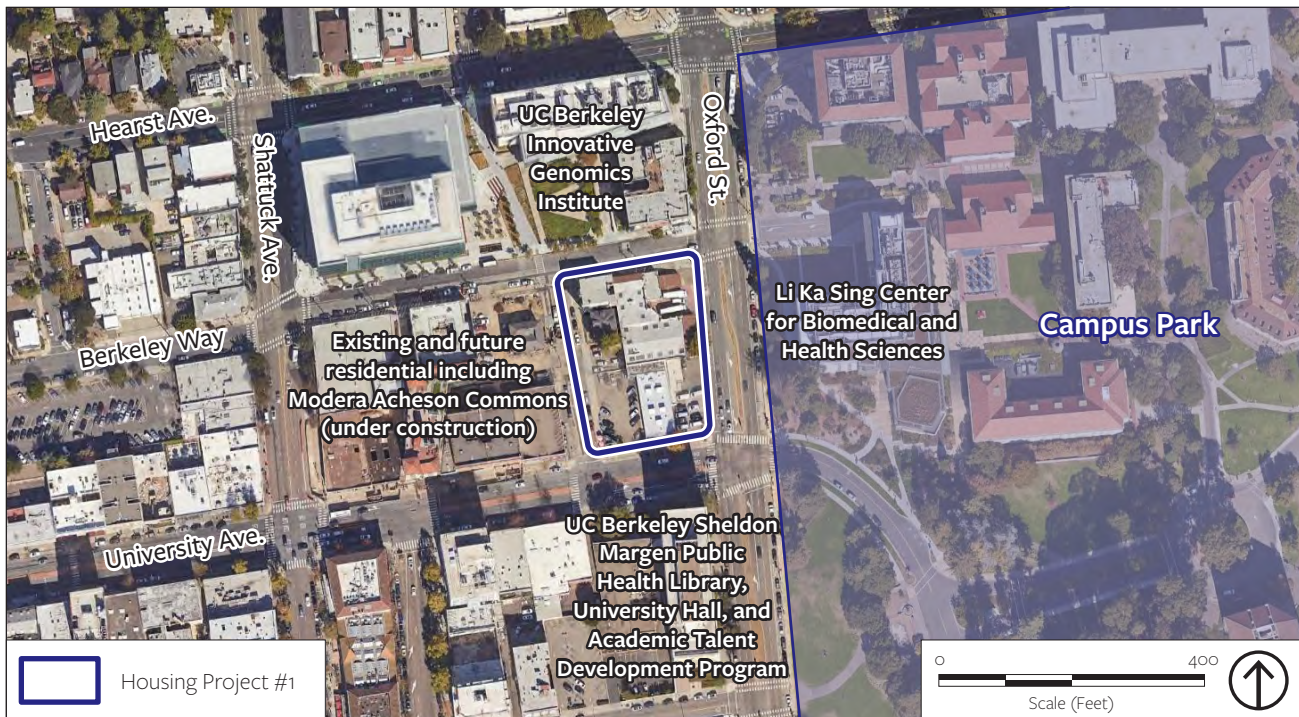
Existing Traffic Noise

Existing traffic noise levels in the vicinity of Housing Project #1 are shown in Table 5.11-8, Existing Traffic Noise: EIR Study Area. As shown in Table 5.11-8, the existing traffic noise level along University Avenue–Shattuck Avenue to Oxford Street is 64.8 L_{dn} at a distance of 50 feet from the nearest travel lane centerline. Along Oxford Street north of University Avenue, existing traffic noise levels are 67.7 L_{dn} at a distance of 50 feet. Along Berkeley Way, existing traffic noise levels are 55.6 L_{dn} at 50 feet. Existing traffic along the one-block section of Walnut Street adjacent to the project site is minimal.

Vibration and Rail

Existing sources of operational vibration in the project vicinity include vehicle traffic on roadways and BART. A Caltrans study found that vibrations from roadway traffic have never exceeded 0.08 inches per second with the worst combinations of heavy trucks and poor roadway conditions, coinciding with the maximum recommended safe level for ruins and ancient monuments (and historic buildings).⁴ BART is the only source of rail-related vibration and noise in the project vicinity. The nearest station is the Downtown Berkeley Station, approximately 900 feet to the southwest of Housing Project #1, on the corner of Center Street and Shattuck Avenue, and the underground line is approximately 500 feet to the west along Shattuck Avenue. Existing rail groundborne vibration and noise are insignificant at the Housing Project #1 project site.

⁴ Caltrans, 2013, Transportation and Construction Vibration Guidance Manual.



Source: Google Earth, 2020; PlaceWorks, 2020.

Figure 5.11-1

Nearby Noise and Vibration-Sensitive Receptors – Housing Project #1



Source: Google Earth, 2020; PlaceWorks, 2020.

Figure 5.11-2

Nearby Noise and Vibration-Sensitive Receptors – Housing Project #2

Stationary Noise

The primary stationary noise source in the immediate vicinity of the project site is HVAC equipment at surrounding buildings. Other stationary noise sources are outdoor dining areas and parks.

Housing Project #2

Sensitive Receptors

Housing Project #2 is bounded by Haste Street to the north, Bowditch Street to the east, Dwight Way to the south, and adjacent residences to the west. Nearby receptors that are sensitive to noise and vibration because they are spaces reserved for instruction and sleeping, or they are historic buildings or structures include:

- **North.** Academic and Residential Uses: Anna Head Alumnae Hall, Miller Institute for Basic Research in Science, and multi-story residential uses (Maximino Martinez Commons and Enclave Apartments)
- **East.** Worship Uses: Vedanta Society of Berkeley and First Church-Christ Scientist
- **South.** Worship and Residential Uses: First Baptist Church-Berkeley and multi-story residential uses
- **West.** Residential Uses: Adjacent multi-story residential uses

There are several historic buildings in close proximity to Housing Project #2, including Anna Head Alumnae Hall to the north, Vedanta Society and First Church of Christ, Scientist to the east, and First Baptist Church to the south that would be subject to potential vibration damage during construction of Housing Project #2. Other nearby sensitive receptors include the Berkeley Rose Waldorf School, other places of worship, and residential uses (see Figure 5.11-2, Nearby Noise and Vibration-Sensitive Receptors: Housing Project #2).

Existing Traffic Noise

Existing traffic noise levels in the vicinity of Housing Project #2 are included in Table 5.11-8, Existing Traffic Noise: EIR Study Area. As shown in Table 5.11-8, existing traffic noise levels along Haste Street–Bowditch Street to Telegraph Avenue are 61.1 L_{dn} at a distance of 50 feet from the nearest travel lane centerline. Along Bowditch Street south of Haste Street, existing traffic noise levels are 58.0 dBA L_{dn} at a distance of 50 feet. Along Dwight Way east of Telegraph Avenue, existing traffic noise levels are 60.8 dBA L_{dn} at 50 feet.

Vibration and Rail

Existing sources of operational vibration in the project vicinity include vehicle traffic on roadways and BART. A Caltrans study found that vibrations from roadway traffic have never exceeded 0.08 inches per second with the worst combinations of heavy trucks and poor roadway conditions, coinciding with the maximum recommended safe level for ruins and ancient monuments (and historic buildings).⁵

⁵ Caltrans, 2013, Transportation and Construction Vibration Guidance Manual.

BART rail is the only source of rail noise near the project vicinity. The nearest station to the proposed project is the Downtown Berkeley Station, approximately 0.6 miles to the northwest. At that distance, and because BART runs underground, existing rail groundborne vibration and noise would be insignificant.

Stationary Noise

Stationary noise sources in the immediate vicinity of the project site would predominantly be HVAC equipment at surrounding buildings. Other noise sources would include nearby restaurants and outdoor dining areas.

5.11.2 STANDARDS OF SIGNIFICANCE

Based on the preliminary analysis in the Notice of Preparation (see Appendix A, Notice of Preparation and Scoping Comments, of this Draft EIR), it was determined that the proposed project would not result in significant environmental impacts related to excessive noise levels for people residing or working in the project area from proximity to a private airstrip, airport land use plan area, public airport, or public use airport, because the project is not within the vicinity of a private airstrip or airport land use plan area or within two miles of a public airport or public use airport. Therefore, this standard is not discussed further in this Draft EIR.

The proposed project would result in a significant noise impact if it would:

1. Generate substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
2. Generate excessive groundborne vibration or groundborne noise levels.
3. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.11.2.1 CONSTRUCTION NOISE

Construction noise impacts are evaluated based on the limits set by the City of Berkeley and City of Oakland, as summarized in the previously shown Table 5.11-5, Maximum Construction Noise Levels (dBA L_{max}): City of Berkeley, and Table 5.11-7, Maximum Construction Noise Levels (dBA L_{max}): City of Oakland. Both the City of Berkeley's and the City of Oakland's construction noise standards are defined by short-term (less than 10 days) or long-term (10 days or more) construction duration, with allowable noise levels by receiving land use and time of day. The City of Berkeley does not have construction noise standards for institutional uses such as schools and places of worship. For the purposes of this Draft EIR, the construction noise standards for residences are conservatively applied to receiving school uses and places of worship. The City of Oakland's construction noise limits apply to sensitive receptors within Oakland city limits that are adjacent or near the Hill Campus East area, such as residences on Mosswood Road, Arden Path, and Panoramic Way.

5.11.2.2 STATIONARY NOISE

Stationary noise sources are regulated by each respective city's municipal code. The City of Berkeley noise standards are shown in Table 5.11-4, Exterior Noise Limits: City of Berkeley, and the City of Oakland's noise standards are shown in Table 5.11-6, Maximum Allowable Noise Level Standards (dBA): City of Oakland. These standards are used to determine impact significance for stationary noise sources.

5.11.2.3 TRAFFIC NOISE

A project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels in the areas around the project. Most people can detect changes in sound levels of approximately 3 dBA under normal, quiet conditions, and changes of 1 to 3 dBA are detectable under quiet, controlled conditions. Changes of less than 1 dBA are usually undetectable. A change of 5 dBA is readily discernible to most people in an exterior environment. Because the City of Berkeley does not have recommended thresholds of significance for traffic noise increases, the following thresholds of significance, similar to those recommended by the Federal Aviation Administration, are used to assess traffic noise impacts at sensitive receptor locations:

- Greater than 1.5 dBA increase for ambient noise environments of 65 dBA L_{dn} and higher.
- Greater than 3 dBA increase for ambient noise environments of 60 to 64 dBA L_{dn} .
- Greater than 5 dBA increase for ambient noise environments of less than 60 dBA L_{dn} .

A significant cumulative traffic noise impact would occur if noise from increased traffic resulting from future development under the proposed LRDP Update would result in an increase of 1 dBA or more under Cumulative Plus Project conditions.

5.11.2.4 VIBRATION

The City of Berkeley and the City of Oakland do not have quantified limits for vibration. The City of Oakland exempts vibration caused by temporary construction or demolition work. The City of Berkeley prohibits vibration that annoys or disturbs people of "normal sensitiveness." The FTA provides criteria for acceptable levels of groundborne vibration based on typical human response. For the purposes of this Draft EIR, 72 VdB will be used as a threshold for potentially annoying groundborne vibration. Vibration impacts near buildings containing sensitive equipment (such as laboratories with optical microscopes) are evaluated with a lower threshold of 65 VdB, as shown in Table 5.11-9, FTA Groundborne Vibration Potential Annoyance Criteria.

TABLE 5.11-9 FTA GROUNDBORNE VIBRATION POTENTIAL ANNOYANCE CRITERIA

Land Use Category	VdB re 1 micro in/sec
Category I: Buildings where vibration would interfere with interior operations	65 VdB ^{a, b}
Category II: Residences and buildings where people normally sleep	72 VdB ^a

Notes: Vibration Decibel (VdB). A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference (re) velocity is one microinch per second (1×10^{-6} in/sec).

a. Frequent Events: more than 70 events per day.

b. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes.

Source: Federal Transit Administration (FTA). 2018, September. Transit Noise and Vibration Impact Assessment.

The FTA criteria to evaluate the potential damage to buildings susceptible to architectural damage are shown in Table 5.11-10, FTA Groundborne Vibration Architectural Damage Criteria. For example, for Category III, (nonengineered timber and masonry buildings), a threshold of 0.2 in/sec PPV would apply.

TABLE 5.11-10 FTA GROUNDBORNE VIBRATION ARCHITECTURAL DAMAGE CRITERIA

Building Category	PPV (in/sec)
I. Reinforced concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Nonengineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage ^a	0.12

Notes: PPV = peak particle velocity

a. Category IV applied to historic structures and buildings.

Source: Federal Transit Administration (FTA). 2018, September. Transit Noise and Vibration Impact Assessment.

5.11.2.5 LAND USE COMPATIBILITY

As a result of a California Supreme Court decision regarding the assessment of the environment's impacts on projects (California Building Industry Association (CBIA) v. Bay Area Air Quality Management District (BAAQMD), 62 Cal. 4th 369 (No. S 213478) issued December 17, 2015), it is generally no longer the purview of the CEQA process to evaluate the impact of existing environmental conditions on a proposed project. As a result, the direct effects of exterior ambient noise from nearby noise sources relative to land use compatibility of a future project as a result of the proposed LRDP Update buildout is no longer a required topic for impact evaluation under CEQA. In general, impact analysis, including a significance conclusion, is not required except under certain circumstances, including public school projects, projects affected by significant airport noise, and projects that would exacerbate existing conditions (i.e., projects that would have a significant operational impact).

At the discretion of UC Berkeley, project requirements may include, but not necessarily be limited to, acoustical studies that show noise reduction features, acoustical design in new construction, and other methods to provide compliance with the California Building Code or other provisions for acceptable indoor and outdoor noise levels.

5.11.3 IMPACT DISCUSSION

NOI-1	The proposed project could generate substantial temporary increases in ambient noise levels in the vicinity of the project in excess of standards established in local noise ordinances.
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LRDP Update

Operational Noise

Traffic Noise

As discussed in Chapter 5.15, Transportation, of this Draft EIR, future development that implements the proposed LRDP Update would cause increases in traffic along local roadways in the EIR Study Area. Traffic volumes for existing and 2040 conditions are shown in Appendix M, Transportation Data, of this Draft EIR. Traffic noise levels were estimated using the FHWA Highway Traffic Noise Prediction Model, which predicts noise levels through a series of adjustments to a reference sound level. These adjustments account for distances from the roadway, traffic volumes, vehicle speeds, car/truck mix, number of lanes, and road width (see Appendix M). Table 5.11-11, Traffic Noise Increases: EIR Study Area, presents the future noise level increases on roadways over existing conditions as well as the projected L_{dn} noise level at 50 feet from the centerline of the nearest travel lane.

A significant impact would occur if traffic noise levels resulted in:

- Greater than 1.5 dBA increase for ambient noise environments of 65 dBA L_{dn} and higher.
- Greater than 3 dBA increase for ambient noise environments of 60 to 64 dBA L_{dn} .
- Greater than 5 dBA increase for ambient noise environments of less than 60 dBA L_{dn} .

As shown in Table 5.11-11, traffic noise increases along roadways would increase up to 2.5 dBA L_{dn} along Addison Street from Shattuck Avenue to Oxford Street; this is projected to be the largest traffic noise increase in the EIR Study Area. Traffic noise increases along all other roadway segments would be less than 1.5 dBA L_{dn} . The existing noise environment along Addison Street is 55 dBA L_{dn} , and so the 5 dBA increase threshold would apply. Accordingly, traffic noise increases would be *less than significant*.

NOISE

TABLE 5.11-11 TRAFFIC NOISE INCREASES: EIR STUDY AREA

Roadway Segment	Existing L _{dn} (dBA) at 50 Feet	2040 Plus LRDP Buildout L _{dn} (dBA) at 50 Feet	L _{dn} (dBA) Increase	Potentially Significant?
Addison Street - Shattuck Avenue to Oxford Street	55.0	57.5	2.5	No
Adeline Street - Ashby Avenue to Martin Luther King Junior Way	62.8	63.4	0.5	No
Adeline Street - south of Alcatraz Avenue	67.9	68.1	0.2	No
Adeline Street - Ward Street to Oregon Street	64.9	65.4	0.5	No
Alcatraz Avenue - west of Adeline Street	62.4	62.5	0.1	No
Alcatraz Avenue - west of College Avenue	63.5	63.6	0.1	No
Ashby Avenue - east of Adeline Street	63.9	64.1	0.2	No
Ashby Avenue - west of San Pablo Avenue	67.0	67.2	0.2	No
Bancroft Way - College Avenue to Piedmont Avenue	61.2	62.1	0.9	No
Bancroft Way - Bowditch Street to College Avenue	63.4	64.2	0.8	No
Bancroft Way - Telegraph Avenue to Bowditch Street	65.2	65.9	0.7	No
Bancroft Way - Dana Street to Telegraph Avenue	66.6	66.9	0.3	No
Bancroft Way - Ellsworth Street to Fulton Street	65.4	65.8	0.3	No
Bancroft Way - Shattuck Avenue to Fulton Street	60.7	61.4	0.7	No
Berkeley Way - Shattuck Avenue to Fulton Street	55.6	56.5	0.8	No
Bowditch Street - south of Bancroft Way	55.6	56.6	1.0	No
Bowditch Street - south of Haste Street	58.0	58.7	0.7	No
Cedar Street - Shattuck Avenue to Milvia Street	57.8	57.9	0.1	No
Center Street - west of Oxford Street	54.5	55.3	0.8	No
Channing Way - east of Shattuck Avenue	60.9	61.6	0.7	No
Claremont Avenue - north of Alcatraz Avenue	64.8	64.9	0.0	No
Claremont Boulevard - north of Russel Street	65.9	66.2	0.4	No
College Avenue - south of Alcatraz Avenue	63.8	64.1	0.3	No
College Avenue - south of Bancroft Way	56.6	57.7	1.1	No
Dana Street - south of Bancroft Way	55.9	56.7	0.8	No
Durant Avenue - east of Shattuck Avenue	58.0	59.3	1.3	No
Dwight Way - east of Seventh Street	57.0	57.2	0.3	No
Dwight Way - east of Telegraph Street	60.8	61.1	0.3	No
Dwight Way - west of Telegraph Street	64.4	64.7	0.3	No
Ellsworth Street - south of Bancroft Way	54.7	56.0	1.3	No
Euclid Avenue - north of Hearst Avenue	58.5	59.1	0.6	No
Fulton Street - south of Bancroft Way	64.0	64.3	0.3	No
Gayley Road - north of University Drive	64.6	64.9	0.3	No
Gayley Road - Stadium Rim Way to University Drive	64.6	64.9	0.3	No
Gilman Street - Between Peralta Ave and Ordway Street	59.5	59.7	0.2	No
Grizzly Peak Boulevard - north of Euclid Avenue	52.5	52.8	0.3	No
Haste Street - Bowditch Street to Telegraph Avenue	61.1	61.7	0.6	No
Hearst Avenue - east of Shattuck Avenue	58.6	59.0	0.4	No
Hearst Avenue - west of Arch Street	64.1	64.5	0.3	No
Hearst Avenue - Euclid Avenue to Scenic Avenue	65.9	66.3	0.4	No
Hearst Avenue - east of Le Roy Avenue	65.4	65.8	0.4	No
I 580 NB On-Ramp - north of Gilman Street	72.7	72.8	0.1	No

TABLE 5.11-11 TRAFFIC NOISE INCREASES: EIR STUDY AREA

Roadway Segment	Existing L _{dn} (dBA) at 50 Feet	2040 Plus LRDP Buildout L _{dn} (dBA) at 50 Feet	L _{dn} (dBA) Increase	Potentially Significant?
I 580 SB Off-Ramp - north of Gilman Street	71.7	71.8	0.1	No
Kittredge Street - Shattuck Avenue to Fulton Street	55.1	55.5	0.4	No
La Loma Avenue - north of Hearst Avenue	61.9	62.1	0.2	No
Le Roy Avenue - north of Hearst Avenue	52.6	52.9	0.3	No
Martin Luther King Jr Way - Allston Way to Bancroft Way	67.1	67.2	0.0	No
Martin Luther King Jr Way - north of University Avenue	67.1	67.2	0.0	No
Oxford Street - north of Cedar Street	58.3	58.4	0.2	No
Oxford Street - north of Hearst Avenue	64.2	64.6	0.3	No
Oxford Street - north of Berkeley Way	66.7	66.9	0.2	No
Oxford Street - south of Center Street	66.5	66.7	0.2	No
Oxford Street - north of University Avenue	67.7	67.9	0.2	No
Piedmont Avenue - Bancroft Way to Durant Avenue	63.3	63.7	0.4	No
Piedmont Avenue - Bancroft Way to Optometry Lane	64.1	64.4	0.3	No
Sacramento St - South of Hopkins Street	60.7	60.7	0.1	No
San Pablo Avenue - Gilman St to Monroe Street	68.7	68.8	0.1	No
San Pablo Avenue - Delaware Street to Hearst Avenue	68.3	68.4	0.1	No
San Pablo Avenue - north of Ashby Avenue	68.4	68.4	0.1	No
San Pablo Avenue - south of Ashby Avenue	69.3	69.4	0.0	No
Scenic Avenue - north of Hearst Avenue	52.6	52.8	0.2	No
Seventh Street - south of Dwight Way	61.9	62.0	0.1	No
Shattuck Avenue - Allston Way to Kittredge Street	66.7	67.1	0.4	No
Shattuck Avenue - Derby Street to Ward Street	66.6	66.9	0.3	No
Shattuck Avenue - Durant Avenue to Channing Way	66.9	67.3	0.4	No
Shattuck Avenue - Hearst Avenue to University Avenue	63.7	64.1	0.4	No
Shattuck Avenue - University Avenue to Addison Street	64.6	65.0	0.4	No
Sixth Street - Hearst Avenue to University Avenue	63.5	63.6	0.1	No
Sixth Street - University Ave to Bancroft way	63.0	63.1	0.0	No
Stadium Rim Way - east of Piedmont Avenue	62.0	62.5	0.4	No
Telegraph Avenue - north of Dwight Way	61.8	62.1	0.3	No
Telegraph Avenue - south of Bancroft Way	60.0	60.4	0.4	No
Telegraph Avenue - south of Derby Street	66.2	66.5	0.2	No
University Avenue - east of Martin Luther King Jr.	66.0	66.3	0.3	No
University Avenue - east of San Pablo Avenue	66.0	66.2	0.2	No
University Avenue - Shattuck Avenue to Oxford Street	64.8	65.6	0.9	No
University Avenue - Sixth Street to San Pablo Avenue	68.3	68.4	0.1	No
University Avenue - west of Shattuck Avenue	64.7	65.1	0.4	No
Warring Street - north of Derby Street	61.8	62.2	0.4	No

Notes:

- A-Weighted Decibel (dBA). An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- Day-Night Sound Level (L_{dn} or DNL). The energy-average of the A-weighted sound levels during a 24-hour period, with 10 dB added from 10:00 p.m. to 7:00 a.m.

Source: Based on the Federal Highway Administration's traffic noise prediction model methodology using roadway volumes, vehicle mix, time of day splits, speeds, and number of lanes provided by Fehr & Peers, 2020.

Stationary Noise

Stationary noise can occur from operation of all types of land uses. Residential uses would generate noise from landscaping and maintenance activities and HVAC systems. Commercial and retail uses would generate noise from HVAC systems, loading docks, and other sources. Noise generated by residential or commercial uses is generally short and intermittent. As previously discussed in Section 5.11.1.4, Regulatory Framework, SNAC is dedicated to improving the quality of life in the neighborhoods adjacent to UC Berkeley properties and supports good neighbor initiatives, campaigns, and programs, such as Happy Neighbors, to engage and serve students and neighbors. Noise reduction initiatives focus on, but are not limited to, parties, sports, and rental spaces. The CalGreeks Alcohol Taskforce provides noise data from CalGreeks events. Happy Neighbors educates students and their neighbors about community expectations, relevant policies and laws, and police and student conduct procedures for possible party and noise-related violations. Nightclubs, outdoor dining areas, gas stations, car washes, fire stations, drive-throughs, swimming pool pumps, school playgrounds, athletic and music events, and public parks are other common noise sources. Stationary noise sources are regulated by the Berkeley Municipal Code Section 13.40.050, Exterior Noise Standards.

As part of the proposed project, UC Berkeley and future development projects would implement the following noise (NOI) CBP:

CBP NOI-1: Mechanical equipment selection and building design shielding will be used, as appropriate, so that noise levels from future building operations would not exceed the City of Berkeley Noise Ordinance limits for commercial areas or residential zones as measured on any commercial or residential property in the area surrounding a project proposed to implement the LRDP. Controls typically incorporated to attain this outcome include selection of quiet equipment, sound attenuators on fans, sound attenuator packages for cooling towers and emergency generators, acoustical screen walls, and equipment enclosures.

Continued implementation of CBP NOI-1 would ensure that appropriate mechanical equipment selection and building design strategies are applied so that stationary noise sources would not exceed the City of Berkeley noise standards. The ongoing implementation of CBP NOI-1, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley Continuing Best Practices, would not create additional noise impacts. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction and short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Adherence to CBP NOI-1 would ensure that the noise limits for commercial and residential zones would be met and implementation of the proposed LRDP Update would not generate noise that causes an impact. Accordingly, with the ongoing implementation of CBP NOI-1, long-term, operational impacts from traffic and stationary sources of projects implementing the proposed LRDP Update would be *less than significant*.

Significance without Mitigation: Less than significant.

Construction Noise

Two types of temporary noise impacts could occur during future construction on the UC Berkeley campus. First, the transport of workers and movement of materials and equipment to and from the site could incrementally increase noise levels along local roads. Second, temporary noise impacts from demolition, site preparation, grading, and/or building construction could occur.

Noise generated by on-site construction equipment is based on the type of equipment used, the location of the activity relative to sensitive receptors, and the timing and duration of noise-generating activities. Each stage of construction involves different kinds of equipment with distinct noise characteristics. Noise levels from construction activities are typically dominated by the loudest equipment, either individually or in combination with other equipment. The dominant equipment noise source is typically an engine, although work-activity noise (such as dropping materials) can also be noticeable.

Overall noise emissions vary considerably, depending on the specific activity being performed at any given moment. Noise attenuation due to distance, the number and type of equipment, and the load and power requirements at each construction phase would result in different noise levels at a given receptor. Since noise from construction equipment is intermittent and diminishes at a rate of at least 6 dBA per doubling of distance⁶ (conservatively ignoring other attenuation effects from air absorption,⁷ ground effects, and/or shielding/scattering effects), the noise levels at various noise-sensitive receptors could vary considerably, because mobile construction equipment would move around the site with different loads and power requirements.

Construction is performed in distinct steps, each of which has its own mix of equipment, and, consequently, its own noise characteristics. Table 5.11-12, Construction Equipment Noise Emission Levels (dBA L_{max}), lists typical construction equipment noise levels recommended for noise-impact assessments, based on a distance of 50 feet between the equipment and noise receptor.

As shown in Table 5.11-12, construction equipment generates high levels of noise, with actual measured noise levels ranging from 73 dBA L_{max} to 101 dBA L_{max} . Construction of future projects associated with implementation of the proposed LRDP Update would temporarily increase the ambient noise environment and would have the potential to affect noise-sensitive land uses in the vicinity of an individual project.

Construction noise levels are highly variable and depend on the specific locations, site design, and construction details of individual projects. Significant noise impacts may occur from operation of heavy earth-moving equipment and truck haul operations, particularly if a project requires impact or vibratory pile driving, which are considered the noisiest activities. The time of day that construction activity is conducted would also determine the noise impacts of each project, particularly during the more sensitive nighttime hours. However, construction would be localized and would occur intermittently for varying periods of time.

⁶ California Department of Transportation, 2013, Technical Noise Supplement. September.

⁷ *Absorption of sound in air* as a function of humidity and temperature.

TABLE 5.11-12 CONSTRUCTION EQUIPMENT NOISE EMISSION LEVELS (DBA LMAX)

Construction Equipment	Typical Max Noise Level Specifications/Actual ^a	Construction Equipment	Typical Max Noise Level Specifications/Actual ^a
Aug Drill Rig	85/84	Jackhammer	85/89
Backhoe	80/78	Man Lift	85/75
Bar Bender	80/NA	Mounted impact Hammer (hoe ram)	90/90
Blasting	94/NA	Pavement Scarifier	85/90
Boring Jack Power Unit	80/83	Paver	85/77
Chain Saw	85/84	Pick-up Truck	55/75
Clam Shovel (dropping)	93/87	Pneumatic Tools	85/85
Compactor (ground)	80/83	Pumps	77/81
Compressor (air)	80/78	Refrigerator Unit	82/73
Concrete Batch Plant	83/NA	Rivit Buster/Chipping Gun	85/79
Concrete Mixer Truck	85/79	Rock Drill	85/81
Concrete Pump Truck	82/81	Roller	85/80
Concrete Saw	90/90	Sand Blasting (single nozzle)	85/96
Crane	85/81	Scraper	85/84
Dozer	85/82	Shears (on backhoe)	85/96
Drill Rig Truck	94/79	Slurry Plant	78/78
Drum Mixer	80/80	Slurry Trenching Machine	82/80
Dump Truck	84/76	Soil Mix Drill Rig	80/NA
Excavator	85/81	Tractor	84/NA
Flat Bed Truck	84/74	Vacuum Excavator (Vac-truck)	85/85
Front End Loader	80/79	Vacuum Street Sweeper	80/82
Generator	82/81	Ventilation Fan	85/79
Gradall	85/3	Vibrating Hopper	85/87
Grader	85/NA	Vibrating Concrete Mixer	80/80
Grapple (on backhoe)	85/87	Vibratory Pile Driver	95/101
Horizontal Boring Hydraulic Jack	80/82	Warning Horn	85/83
Hydra Break Ram	90/NA	Welder/Torch	73/74
Impact Pile Driver	95/101	All Other Equipment > 5 horsepower	85/NA

Note:

a. "Specifications" refers to noise levels stated in noise specifications, and "Actual" refers to L_{max} (The maximum noise level during a measurement period.) values measured at 50 feet from the equipment.

Source: Federal Highway Administration, 2006. Roadway Construction Noise Model User's Guide.

As part of the proposed project, UC Berkeley and future development projects would implement the noise (NOI) CBPs listed here, which have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP NOI-2 (Updated):** UC Berkeley will require the following measures for all construction projects:
 - Construction activities will be limited to a schedule that minimizes disruption to uses surrounding the project site as much as possible. Construction outside the Campus Park will be scheduled within the allowable construction hours designated in the noise ordinance of the local jurisdiction to the full feasible extent, and exceptions will be avoided except where necessary. As feasible, construction equipment will be required to be muffled or controlled.
 - The intensity of potential noise sources will be reduced where feasible by selection of quieter equipment (e.g., gas or electric equipment instead of diesel powered, low noise air compressors).
 - Functions such as concrete mixing and equipment repair will be performed off-site whenever possible.
 - Stationary equipment such as generators and air compressors will be located as far as feasible from nearby noise-sensitive uses.
 - At least 10 days prior to the start of construction activities, a sign will be posted at the entrance(s) to the job site, clearly visible to the public, that includes permitted construction days and hours, as well as the telephone numbers of UC Berkeley's and contractor's authorized representatives that are assigned to respond in the event of a noise or vibration complaint. If the authorized contractor's representative receives a complaint, they will investigate, take appropriate corrective action, and report the action to UC Berkeley.
 - During the entire active construction period and to the extent feasible, the use of noise-producing signals, including horns, whistles, alarms, and bells, will be for safety warning purposes only. The construction manager will use smart back-up alarms, which automatically adjust the alarm level based on the background noise level, or switch off back-up alarms and replace with human spotters in compliance with all safety requirements and laws.

For projects requiring pile driving:

- With approval of the project structural engineer, pile holes will be pre-drilled to minimize the number of impacts necessary to seat the pile.
- Pile driving will be scheduled to have the least impact on nearby sensitive receptors.
- Pile drivers with the best available noise control technology will be used. For example, pile driving noise control may be achieved by shrouding the pile hammer point of impact, by placing resilient padding directly on top of the pile cap, and/or by reducing exhaust noise with a sound-absorbing muffler.
- Alternatives to impact hammers, such as oscillating or rotating pile installation systems, will be used where possible.
- **CBP NOI-3 (Updated):** UC Berkeley will precede all new construction projects that are outside of the Campus Park, the Clark Kerr Campus, or adjacent to a non-UC Berkeley property with community notification, with the purpose of ensuring that the mutual needs of the particular construction project and of those impacted by construction noise are met, to the extent feasible.

CBP NOI-2 and CBP NOI-3 establish a series of actions with which future development must comply to reduce noise. The ongoing implementation of CBP NOI-2 and CBP NOI-3, and the CBPs discussed

throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional noise impacts. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

In most cases, even with implementation of CBP NOI-2 and CBP NOI-3, the construction of individual projects under the proposed LRDP Update would temporarily increase the ambient noise levels in the vicinity of each individual potential future project, resulting in potential noise impacts to existing and future nearby sensitive uses. Given the variables affecting construction-period noise impacts, including project location, type and size, type of construction equipment, time of day, phasing, and overall durations, noise impacts from construction associated with implementation of the proposed LRDP Update, even with adherence to CBP NOI-2 and CBP NOI-3, would be *significant*.

Impact NOI-1: Noise from construction equipment could expose sensitive receptors to noise that exceeds the thresholds of significance.

Mitigation Measure NOI-1: For construction projects that last longer than 30 days, and where construction noise could exceed the applicable noise thresholds of significance (see City of Berkeley Municipal Code Section 13.40.070, Prohibited Acts, and City of Oakland Municipal Code Section 17.120.050(A), Noise (Residential Zone Noise Level Standards)) for maximum construction noise levels (dBA L_{max}), or that involve impulse equipment such as jackhammers, hoe rams, and pile driving, temporary noise barriers at least 12 feet high will be erected, as necessary and feasible, to reduce construction noise levels. Temporary noise barriers will be constructed with solid material with a density of at least 1.5 pounds per square foot with no gaps from the ground to the top of the temporary noise barrier and may be lined on the construction side with an acoustical blanket, curtain, or equivalent absorptive material. UC Berkeley shall verify compliance with this measure prior to issuance of demolition, grading, and/or building permits.

Significance with Mitigation: Significant and unavoidable. The effective use of temporary noise barriers, as required under Mitigation Measure NOI-1 can achieve up to 20 dBA of noise reduction.^{8,9} However, the greatest reduction would be at ground-floor receptors, and they may not be as effective for residential, classroom, or commercial buildings with multiple stories. CBP NOI-2 would require that alternatives to pile driving be used where possible. Because construction activities associated with potential future projects may occur near noise-sensitive receptors and because, depending on the project type, equipment list, time of day, and phasing and overall construction duration, noise disturbances may occur for prolonged periods of time, during the more sensitive nighttime hours, or may exceed UC Berkeley's adopted construction noise standards even with project-level mitigation, construction noise impacts associated with implementation of the proposed LRDP Update would be

⁸ Bies, Hansen, Howard, 2018, Engineering Noise Control Fifth Edition.

⁹ Harris, Cyril, 1991, Handbook of Acoustical Measurements and Noise Control Third Edition.

significant and unavoidable. The identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects analyzed at the project level that do not exceed the noise thresholds.

Housing Project #1

As described in Section 5.11.1.5, Existing Conditions, the noise-sensitive receptors (spaces reserved for learning, instruction, and sleeping) that are near Housing Project #1 are the UC Berkeley Innovative Genomics Institute and residences to the north; the Li Ka Sing Center for Biomedical and Health Sciences to the east; the UC Berkeley Sheldon Margen Public Health Library, University Hall, and Academic Talent Development Program to the south; and the existing and future residential buildings, including Modera Acheson Commons (under construction), to the west.

Operational Noise

Traffic Noise

Table 5.11-13, Traffic Noise Increases: Housing Project #1, summarizes the calculated traffic noise increases associated with operation of Housing Project #1 using traffic data provided by Fehr & Peers. As shown in Table 5.11-13, traffic noise along study roadway segments with operation of Housing Project #1 would increase up to 0.7 dBA L_{dn} along Berkeley Way from Shattuck Avenue to Fulton Street, which is the largest traffic noise increase in the EIR Study Area with operation of Housing Project #1. Traffic noise increases along all study roadway segments would be less than the most restrictive threshold of significance of 1.5 dBA L_{dn} . Therefore, traffic noise increases with operation of Housing Project #1 would be *less than significant*.

TABLE 5.11-13 TRAFFIC NOISE INCREASES: HOUSING PROJECT #1

Roadway Segment	Existing L_{dn} (dBA) at 50 Feet	Existing Plus Housing Project #1 L_{dn} (dBA) at 50 Feet	L_{dn} (dBA) Increase	Potentially Significant?
Addison Street - Shattuck Avenue to Oxford Street	55.0	55.1	0.0	No
Adeline Street - Ashby Avenue to Martin Luther King Junior Way	62.8	62.8	0.0	No
Adeline Street - south of Alcatraz Avenue	67.9	67.9	0.0	No
Adeline Street - Ward Street to Oregon Street	64.9	64.9	0.0	No
Alcatraz Avenue - west of Adeline Street	62.4	62.4	0.0	No
Alcatraz Avenue - west of College Avenue	63.5	63.5	0.0	No
Ashby Avenue - east of Adeline Street	63.9	63.9	0.0	No
Ashby Avenue - west of San Pablo Avenue	67.0	67.0	0.0	No
Bancroft Way - College Avenue to Piedmont Avenue	61.2	61.3	0.0	No
Bancroft Way - Bowditch Street to College Avenue	63.4	63.5	0.0	No
Bancroft Way - Telegraph Avenue to Bowditch Street	65.2	65.2	0.0	No
Bancroft Way - Dana Street to Telegraph Avenue	66.6	66.6	0.0	No
Bancroft Way - Ellsworth Street to Fulton Street	65.4	65.5	0.0	No
Bancroft Way - Shattuck Avenue to Fulton Street	60.7	60.8	0.0	No
Berkeley Way - Shattuck Avenue to Fulton Street	55.6	56.3	0.7	No

TABLE 5.11-13 TRAFFIC NOISE INCREASES: HOUSING PROJECT #1

Roadway Segment	Existing L _{dn} (dBA) at 50 Feet	Existing Plus Housing Project #1 L _{dn} (dBA) at 50 Feet	L _{dn} (dBA) Increase	Potentially Significant?
Bowditch Street - south of Bancroft Way	55.6	55.6	0.0	No
Bowditch Street - south of Haste Street	58.0	58.1	0.0	No
Cedar Street - Shattuck Avenue to Milvia Street	57.8	57.8	0.0	No
Center Street - west of Oxford Street	54.5	54.6	0.0	No
Channing Way - east of Shattuck Avenue	60.9	60.9	0.0	No
Claremont Avenue - north of Alcatraz Avenue	64.8	64.8	0.0	No
Claremont Boulevard - north of Russel Street	65.9	65.9	0.0	No
College Avenue - south of Alcatraz Avenue	63.8	63.8	0.0	No
College Avenue - south of Bancroft Way	56.6	56.6	0.0	No
Dana Street - south of Bancroft Way	55.9	55.9	0.0	No
Durant Avenue - east of Shattuck Avenue	58.0	58.0	0.1	No
Dwight Way - east of Seventh Street	57.0	57.0	0.0	No
Dwight Way - east of Telegraph Street	60.8	60.8	0.0	No
Dwight Way - west of Telegraph Street	64.4	64.4	0.0	No
Ellsworth Street - south of Bancroft Way	54.7	54.7	0.0	No
Euclid Avenue - north of Hearst Avenue	58.5	58.5	0.0	No
Fulton Street - south of Bancroft Way	64.0	64.0	0.0	No
Gayley Road - north of University Drive	64.6	64.6	0.0	No
Gayley Road - Stadium Rim Way to University Drive	64.6	64.6	0.0	No
Gilman Street - Between Peralta Ave and Ordway Street	59.5	59.5	0.0	No
Grizzly Peak Boulevard - north of Euclid Avenue	52.5	52.5	0.0	No
Haste Street - Bowditch Street to Telegraph Avenue	61.1	61.1	0.0	No
Hearst Avenue - east of Shattuck Avenue	58.6	58.7	0.0	No
Hearst Avenue - west of Arch Street	64.1	64.2	0.0	No
Hearst Avenue - Euclid Avenue to Scenic Avenue	65.9	66.0	0.0	No
Hearst Avenue - east of Le Roy Avenue	65.4	65.4	0.0	No
I 580 NB On-Ramp - north of Gilman Street	72.7	72.7	0.0	No
I 580 SB Off-Ramp - north of Gilman Street	71.7	71.7	0.0	No
Kittredge Street - Shattuck Avenue to Fulton Street	55.1	55.1	0.0	No
La Loma Avenue - north of Hearst Avenue	61.9	61.9	0.0	No
Le Roy Avenue - north of Hearst Avenue	52.6	52.7	0.0	No
Martin Luther King Jr Way - Allston Way to Bancroft Way	67.1	67.1	0.0	No
Martin Luther King Jr Way - north of University Avenue	67.1	67.1	0.0	No
Oxford Street - north of Cedar Street	58.3	58.3	0.0	No
Oxford Street - north of Hearst Avenue	64.2	64.3	0.0	No
Oxford Street - north of Berkeley Way	66.7	66.7	0.0	No
Oxford Street - south of Center Street	66.5	66.6	0.0	No
Oxford Street - north of University Avenue	67.7	67.7	0.1	No
Piedmont Avenue - Bancroft Way to Durant Avenue	63.3	63.3	0.0	No
Piedmont Avenue - Bancroft Way to Optometry Lane	64.1	64.1	0.0	No
Sacramento St - South of Hopkins Street	60.7	60.7	0.0	No

TABLE 5.11-13 TRAFFIC NOISE INCREASES: HOUSING PROJECT #1

Roadway Segment	Existing L _{dn} (dBA) at 50 Feet	Existing Plus Housing Project #1 L _{dn} (dBA) at 50 Feet	L _{dn} (dBA) Increase	Potentially Significant?
San Pablo Avenue - Gilman St to Monroe Street	68.7	68.7	0.0	No
San Pablo Avenue - Delaware Street to Hearst Avenue	68.3	68.3	0.0	No
San Pablo Avenue - north of Ashby Avenue	68.4	68.4	0.0	No
San Pablo Avenue - south of Ashby Avenue	69.3	69.3	0.0	No
Scenic Avenue - north of Hearst Avenue	52.6	52.6	0.0	No
Seventh Street - south of Dwight Way	61.9	61.9	0.0	No
Shattuck Avenue - Allston Way to Kittredge Street	66.7	66.7	0.0	No
Shattuck Avenue - Derby Street to Ward Street	66.6	66.6	0.0	No
Shattuck Avenue - Durant Avenue to Channing Way	66.9	66.9	0.0	No
Shattuck Avenue - Hearst Avenue to University Avenue	63.7	63.7	0.0	No
Shattuck Avenue - University Avenue to Addison Street	64.6	64.6	0.0	No
Sixth Street - Hearst Avenue to University Avenue	63.5	63.5	0.0	No
Sixth Street - University Avenue to Bancroft Way	63.0	63.0	0.0	No
Stadium Rim Way - east of Piedmont Avenue	62.0	62.1	0.0	No
Telegraph Avenue - north of Dwight Way	61.8	61.8	0.0	No
Telegraph Avenue - south of Bancroft Way	60.0	60.0	0.0	No
Telegraph Avenue - south of Derby Street	66.2	66.2	0.0	No
University Avenue - east of Martin Luther King Jr.	66.0	66.1	0.0	No
University Avenue - east of San Pablo Avenue	66.0	66.1	0.0	No
University Avenue - Shattuck Avenue to Oxford Street	64.8	64.9	0.2	No
University Avenue - Sixth Street to San Pablo Avenue	68.3	68.3	0.0	No
University Avenue - west of Shattuck Avenue	64.7	64.8	0.1	No
Warring Street - north of Derby Street	61.8	61.8	0.0	No

Notes:

- A-Weighted Decibel (dBA). An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- Day-Night Sound Level (L_{dn} or DNL). The energy-average of the A-weighted sound levels during a 24-hour period, with 10 dB added from 10:00 p.m. to 7:00 a.m.

Source: Based on the Federal Highway Administration's traffic noise prediction model methodology using roadway volumes, vehicle mix, time of day splits, speeds, and number of lanes provided by Fehr & Peers, 2020.

Stationary Noise

The dominant stationary noise sources associated with operation of Housing Project #1 would be speech from people talking at the proposed 2nd and 13th floor terraces and noise from the building's mechanical equipment, both are further described further below.

The main noise source associated with the use of the proposed terrace features would be speech from conversations. Typically, a conversation between two people using a normal voice (not raised) at a distance

of three feet is 60 dBA.¹⁰ No amplified sound is proposed at any of the terraces, and speech from conversations would quickly dissipate and would not interfere with surrounding outdoor activities and noise-sensitive uses. Social uses of the proposed terrace features would be required to comply with the City of Berkeley Municipal Code exterior noise standards, and stationary noise impacts from the proposed terrace features would be *less than significant*.

The HVAC systems for Housing Project #1 are proposed to be installed on the rooftop and screened from view with a parapet wall. Based on the conceptual rooftop plan, HVAC equipment would be located in various areas along the perimeter of the roof. Table 5.11-14, HVAC Mechanical Noise Levels at Nearby Sensitive Receptors: Housing Project #1, shows the noise levels. Distances are measured from the edge of proposed equipment locations to the property line of the sensitive receptors. The proposed parapet wall would provide at least 5 dBA of additional noise attenuation. Typical HVAC noise is 72 dBA at a distance of three feet. At the varying distances to the sensitive receptors, HVAC-related noise would attenuate to 40 dBA or less. Therefore, HVAC equipment noise from Housing Project #1 would not exceed the daytime or nighttime noise standards of 55/45 dBA in the City of Berkeley Municipal Code. Accordingly, stationary noise impacts from HVAC equipment would be *less than significant*.

TABLE 5.11-14 HVAC MECHANICAL NOISE LEVELS AT NEARBY SENSITIVE RECEPTORS: HOUSING PROJECT #1

Receptors	Distance to Receiver, feet	Noise Level with Parapet Wall, dBA ^a	Exceeds Berkeley Daytime/Nighttime 55/45 dBA ^a Threshold?
UC Berkeley Innovative Genomics Institute – north	70	40	No
Li Ka Sing Center for Biomedical and Health Sciences – east	105	36	No
UC Berkeley Sheldon Margen Public Health Library – south	120	35	No
Existing and Future Residential – west	70	40	No

Notes: See Appendix J, Noise Data, for distance calculations based on the inverse square law. Distances are measured from the edge of proposed equipment locations to the property line of the sensitive receptors.

a. A-Weighted Decibel (dBA) is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear. Source: PlaceWorks, 2020.

Significance without Mitigation: Less than significant.

Construction Noise

Two types of short-term noise impacts could occur during construction: (1) mobile-source noise from the transport of workers, material deliveries, and debris/soil hauling and (2) stationary-source noise from use of construction equipment. Construction activities are anticipated to last approximately 34 months and would involve: demolition, site preparation, grading, excavation, foundations, building construction, paving, and architectural coating.¹¹ Anticipated construction equipment would include, but is not limited to, concrete saws, excavators, dozers, tractors, loaders, backhoes, cranes, forklifts, pavers, rollers, pile drivers, and air

¹⁰ Engineering ToolBox, 2005, Voice Level at Distance,” https://www.engineeringtoolbox.com/voice-level-d_938.html, accessed September 22, 2020.

¹¹ Since no parking lots or driveways are proposed for Housing Project #1, paving activity is anticipated to be minimal.

compressors. While pile driving is not currently proposed, because the site plans are conceptual, pile driving is evaluated in this EIR.

Construction Vehicles

The transport of workers and materials to and from the construction site would incrementally increase noise levels along local roadways. Individual construction vehicle pass-bys may create momentary noise levels of up to approximately 85 dBA (L_{max}) at 50 feet from the vehicle.

Construction activity is anticipated to generate up to 820 daily worker and vendor vehicle trips (combined) during the overlapping phases of building construction, architectural coating, and paving. Grading and soil haul is anticipated to generate approximately 667 daily haul trips over nine working days.¹² The nearest designated truck route is Shattuck Avenue.¹³ Existing average daily trips (ADT) along Shattuck Avenue near the project site range from 14,810 to 31,960 trips (see Appendix M, Transportation Data, of this Draft EIR). Adding 820 daily worker/vendor trips and 667 daily haul trips to existing ADT along Shattuck Avenue results in a temporary traffic noise increase of up to 0.4 dBA L_{dn} .

As shown previously on Table 5.11-8, Existing Traffic Noise: EIR Study Area, the existing noise levels along Shattuck Avenue from Allston Way to Addison Street, range between approximately 64 dBA L_{dn} to 67 dBA L_{dn} . An impact would occur if construction trips resulted in a temporary increase of

- 1.5 dBA L_{dn} in an existing environment of greater than 65 L_{dn} , or
- 3 dBA L_{dn} in an existing environment of 60 dBA L_{dn} to 65 L_{dn} .

Accordingly, the temporary noise increase of up to 0.4 dBA L_{dn} from on-road construction vehicles would not exceed these thresholds. Therefore, noise impacts from temporary construction-related trips would be *less than significant* at noise-sensitive receptors along the construction routes, and no mitigation measures would be required.

Construction Activities

As shown previously in Table 5.11-12, Construction Equipment Noise Emission Levels (dBA L_{max}), construction noise levels range between 73 dBA L_{max} and 101 dBA L_{max} at a distance of 50 feet. Though pile driving is not currently proposed, for a conservative analysis, this evaluation assumes that pile driving may be necessary during construction of the proposed Housing Project #1.

To estimate noise levels at nearby sensitive receptors, the distance between the noise source and receiver is used to calculate additional spreading loss beyond the reference distance of 50 feet. To estimate L_{max} noise levels from construction activity, the distance measured is from the edge of the proposed building to the sensitive receptor property line for pile driving, and from the edge of the construction site for all other equipment.

¹² Construction trips based on CalEEMod construction outputs.

¹³ Department of Public Works, Transportation Division, City of Berkeley.
https://www.cityofberkeley.info/uploadedFiles/Public_Works/Level_3_-_Transportation/mapoftruckroutesystem.pdf.

Table 5.11-15, Construction Noise Levels at Nearby Receptors (dBA L_{max}): Housing Project #1, shows the maximum noise level at the property line of the nearest sensitive receptors during pile driving, demolition, and grading. As shown in Table 5.11-15, noise levels would exceed the City of Berkeley's daytime noise standards of 60 dBA L_{max} on weekdays from 7:00 a.m. to 7:00 p.m. and 50 dBA L_{max} on weekends from 9:00 a.m. to 8:00 p.m. (see Table 5.11-5, Maximum Construction Noise Levels (dBA L_{max}): City of Berkeley). Therefore, construction noise impacts would be *potentially significant*.

TABLE 5.11-15 CONSTRUCTION NOISE LEVELS AT NEARBY RECEPTORS (dBA L_{MAX}): HOUSING PROJECT #1

Activity	Academic and Residential Uses 65 feet to north	Academic Uses 100 feet to east	Academic Uses 100 feet to south	Residential Uses 60 feet to west	Greater than 50/60 dBA L_{max} and potentially significant?
Pile Driving ^a	99	95	95	99	Yes
Demolition ^b	88	84	84	88	Yes
Grading ^c	83	79	79	83	Yes

Notes: Distance measured from the edge of construction to the nearest receptor property line. See Table 5.11-12, Construction Equipment Noise Emission Levels (dBA L_{max}), for the following assumptions:

a. Impact pile driver assumed for pile driving.

b. Concrete saw assumed for demolition.

c. Grader assumed for grading.

Source: Federal Highway Administration's Roadway Construction Noise Model User's Guide (RCNM), 2006.

Impact: Same as Impact NOI-1.

Mitigation Measure: Same as Mitigation Measure NOI-1.

Significance with Mitigation: Significant and unavoidable. With implementation of Mitigation Measure NOI-1, grading noise levels would attenuate up 20 dBA, resulting in mitigated construction noise levels between 59 dBA L_{max} and 63 dBA L_{max} at the nearest sensitive receptors. However, the greatest reductions would occur at ground-floor and second-story receptors. Mitigation Measure NOI-1 would not be as effective for the future multi-story residential use (Modera Acheson Commons) to the west and the existing multi-story residential uses to the north. Demolition and construction equipment could, at times, be higher than the temporary noise barrier. If the project requires pile driving, shrouding the pile driving equipment would attenuate noise levels by 10 dBA or more, resulting in mitigated construction noise levels of 89 dBA L_{max} or less. However, even without pile driving, construction noise levels could still exceed the acceptable noise limits for demolition and grading activities. Therefore, construction noise could still exceed the City of Berkeley's daytime construction noise standards of 60 dBA L_{max} weekdays and 50 dBA L_{max} weekends at times, and temporary construction noise impacts would remain *significant and unavoidable* with or without noise from pile driving.

Housing Project #2

As described in Section 5.11.1.5, Existing Conditions, the noise-sensitive receptors (spaces reserved for learning, instruction, worshipping, and sleeping) that are near Housing Project #2 are the Anna Head Alumnae Hall, Miller Institute for Basic Research in Science, and multi-story residential uses (Maximino Martinez Commons and Enclave Apartments) to the north; the Vedanta Society of Berkeley and First Church-Christ Scientist to the east; the First Baptist Church-Berkeley and multi-story residential uses to the south; and multi-story residential uses adjacent to the west.

Operational Noise

Traffic Noise

Table 5.11-16, Traffic Noise Increases: Housing Project #2, summarizes the calculated traffic noise increase associated with operation of Housing Project #2 using traffic data provided by Fehr & Peers. As shown in Table 5.11-16, traffic noise along roadway segments with operation of Housing Project #2 would increase up to 0.2 dBA L_{dn} along Bowditch Street south of Haste Street and Haste Street from Bowditch Street to Telegraph Avenue. These are the largest traffic noise increases in the EIR Study Area with implementation of Housing Project #2. Traffic noise increases along all study roadway segments would be less than the most restrictive threshold of significance of 1.5 dBA L_{dn} . Therefore, traffic noise increases with operation of Housing Project #2 would be *less than significant*.

TABLE 5.11-16 TRAFFIC NOISE INCREASES: HOUSING PROJECT #2

Roadway Segment	Existing L_{dn} (dBA) at 50 Feet	Existing Plus Housing Project #2 L_{dn} (dBA) at 50 Feet	L_{dn} (dBA) Increase	Potentially Significant?
Addison Street - Shattuck Avenue to Oxford Street	55.0	55.0	0.0	No
Adeline Street - Ashby Avenue to Martin Luther King Jr. Way	62.8	62.9	0.0	No
Adeline Street - south of Alcatraz Avenue	67.9	67.9	0.0	No
Adeline Street - Ward Street to Oregon Street	64.9	64.9	0.0	No
Alcatraz Avenue - west of Adeline Street	62.4	62.4	0.0	No
Alcatraz Avenue - west of College Avenue	63.5	63.5	0.0	No
Ashby Avenue - east of Adeline Street	63.9	63.9	0.0	No
Ashby Avenue - west of San Pablo Avenue	67.0	67.0	0.0	No
Bancroft Way - College Avenue to Piedmont Avenue	61.2	61.2	0.0	No
Bancroft Way - Bowditch Street to College Avenue	63.4	63.5	0.0	No
Bancroft Way - Telegraph Avenue to Bowditch Street	65.2	65.2	0.0	No
Bancroft Way - Dana Street to Telegraph Avenue	66.6	66.6	0.0	No
Bancroft Way - Ellsworth Street to Fulton Street	65.4	65.5	0.0	No
Bancroft Way - Shattuck Avenue to Fulton Street	60.7	60.8	0.0	No
Berkeley Way - Shattuck Avenue to Fulton Street	55.6	55.6	0.0	No
Bowditch Street - south of Bancroft Way	55.6	55.7	0.1	No
Bowditch Street - south of Haste Street	58.0	58.3	0.2	No
Cedar Street - Shattuck Avenue to Milvia Street	57.8	57.8	0.0	No
Center Street - west of Oxford Street	54.5	54.6	0.0	No
Channing Way - east of Shattuck Avenue	60.9	60.9	0.0	No

TABLE 5.11-16 TRAFFIC NOISE INCREASES: HOUSING PROJECT #2

Roadway Segment	Existing L_{dn} (dBA) at 50 Feet	Existing Plus Housing Project #2 L_{dn} (dBA) at 50 Feet	L_{dn} (dBA) Increase	Potentially Significant?
Claremont Avenue - north of Alcatraz Avenue	64.8	64.8	0.0	No
Claremont Boulevard - north of Russel Street	65.9	65.9	0.0	No
College Avenue - south of Alcatraz Avenue	63.8	63.8	0.0	No
College Avenue - south of Bancroft Way	56.6	56.6	0.1	No
Dana Street - south of Bancroft Way	55.9	55.9	0.0	No
Durant Avenue - east of Shattuck Avenue	58.0	58.0	0.0	No
Dwight Way - east of Seventh Street	57.0	57.0	0.0	No
Dwight Way - east of Telegraph Street	60.8	61.0	0.2	No
Dwight Way - west of Telegraph Street	64.4	64.5	0.1	No
Ellsworth Street - south of Bancroft Way	54.7	54.7	0.0	No
Euclid Avenue - north of Hearst Avenue	58.5	58.5	0.0	No
Fulton Street - south of Bancroft Way	64.0	64.0	0.0	No
Gayley Road - north of University Drive	64.6	64.6	0.0	No
Gayley Road - Stadium Rim Way to University Drive	64.6	64.6	0.0	No
Gilman Street - Between Peralta Ave and Ordway Street	59.5	59.5	0.0	No
Grizzly Peak Boulevard - north of Euclid Avenue	52.5	52.5	0.0	No
Haste Street - Bowditch Street to Telegraph Avenue	61.1	61.3	0.2	No
Hearst Avenue - east of Shattuck Avenue	58.6	58.7	0.0	No
Hearst Avenue - west of Arch Street	64.1	64.1	0.0	No
Hearst Avenue - Euclid Avenue to Scenic Avenue	65.9	65.9	0.0	No
Hearst Avenue - east of Le Roy Avenue	65.4	65.4	0.0	No
I 580 NB On-Ramp - north of Gilman Street	72.7	72.7	0.0	No
I 580 SB Off-Ramp - north of Gilman Street	71.7	71.7	0.0	No
Kittredge Street - Shattuck Avenue to Fulton Street	55.1	55.1	0.0	No
La Loma Avenue - north of Hearst Avenue	61.9	61.9	0.0	No
Le Roy Avenue - north of Hearst Avenue	52.6	52.6	0.0	No
Martin Luther King Jr Way - Allston Way to Bancroft Way	67.1	67.1	0.0	No
Martin Luther King Jr Way - north of University Avenue	67.1	67.1	0.0	No
Oxford Street - north of Cedar Street	58.3	58.3	0.0	No
Oxford Street - north of Hearst Avenue	64.2	64.2	0.0	No
Oxford Street - north of Berkeley Way	66.7	66.7	0.0	No
Oxford Street - south of Center Street	66.5	66.5	0.0	No
Oxford Street - north of University Avenue	67.7	67.7	0.0	No
Piedmont Avenue - Bancroft Way to Durant Avenue	63.3	63.3	0.0	No
Piedmont Avenue - Bancroft Way to Optometry Lane	64.1	64.1	0.0	No
Sacramento Street - South of Hopkins Street	60.7	60.7	0.0	No
San Pablo Avenue - Gilman St to Monroe Street	68.7	68.7	0.0	No
San Pablo Avenue - Delaware Street to Hearst Avenue	68.3	68.3	0.0	No
San Pablo Avenue - north of Ashby Avenue	68.4	68.4	0.0	No
San Pablo Avenue - south of Ashby Avenue	69.3	69.3	0.0	No
Scenic Avenue - north of Hearst Avenue	52.6	52.6	0.0	No
Seventh Street - south of Dwight Way	61.9	61.9	0.0	No

TABLE 5.11-16 TRAFFIC NOISE INCREASES: HOUSING PROJECT #2

Roadway Segment	Existing L _{dn} (dBA) at 50 Feet	Existing Plus Housing Project #2 L _{dn} (dBA) at 50 Feet	L _{dn} (dBA) Increase	Potentially Significant?
Shattuck Avenue - Allston Way to Kittredge Street	66.7	66.7	0.0	No
Shattuck Avenue - Derby Street to Ward Street	66.6	66.6	0.0	No
Shattuck Avenue - Durant Avenue to Channing Way	66.9	66.9	0.0	No
Shattuck Avenue - Hearst Avenue to University Avenue	63.7	63.7	0.0	No
Shattuck Avenue - University Avenue to Addison Street	64.6	64.6	0.0	No
Sixth Street - Hearst Avenue to University Avenue	63.5	63.5	0.0	No
Sixth Street - University Avenue to Bancroft Way	63.0	63.0	0.0	No
Stadium Rim Way - east of Piedmont Avenue	62.0	62.1	0.0	No
Telegraph Avenue - north of Dwight Way	61.8	61.9	0.1	No
Telegraph Avenue - south of Bancroft Way	60.0	60.0	0.0	No
Telegraph Avenue - south of Derby Street	66.2	66.2	0.0	No
University Avenue - east of Martin Luther King Jr. Way	66.0	66.0	0.0	No
University Avenue - east of San Pablo Avenue	66.0	66.0	0.0	No
University Avenue - Shattuck Avenue to Oxford Street	64.8	64.8	0.0	No
University Avenue - Sixth Street to San Pablo Avenue	68.3	68.3	0.0	No
University Avenue - west of Shattuck Avenue	64.7	64.8	0.0	No
Warring Street - north of Derby Street	61.8	61.8	0.0	No

Notes:

- A-Weighted Decibel (dBA). An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- Day-Night Sound Level (L_{dn} or DNL). The energy-average of the A-weighted sound levels during a 24-hour period, with 10 dB added from 10:00 p.m. to 7:00 a.m.

Source: Based on the Federal Highway Administration's traffic noise prediction model methodology using roadway volumes, vehicle mix, time of day splits, speeds, and number of lanes provided by Fehr & Peers, 2020.

Stationary Noise

The dominant stationary noise sources associated with operation of Housing Project #2 would be speech from people talking at the proposed approximately 82,000 square feet (1.8 acres) park, for continued use as public open space and noise from mechanical equipment, both are further described further below.

As described in Chapter 3, Project Description, of this Draft EIR, the proposed project would be designed to preserve 67 percent of the site, approximately 82,000 square feet or 1.8 acres, for continued use as public open space. This is about a one-acre reduction from the existing informal park use on the 2.8-acre (122,000-square-foot) project site. The main noise source associated with the use of the open space would be speech from conversations. Typically, a conversation between two people using a normal voice (not raised) at a distance of three feet is 60 dBA.¹⁴ No amplified sound is proposed at the open space areas, and speech from conversations would quickly dissipate and would not interfere with surrounding outdoor

¹⁴ Engineering ToolBox, 2005, "Voice Level at Distance," https://www.engineeringtoolbox.com/voice-level-d_938.html, accessed September 22, 2020.

activities and noise-sensitive uses. In addition, this would be a reduction of the existing park space and the proposed buildings would provide more acoustical shielding than under existing conditions. Social uses of the open space would be required to comply with the City of Berkeley Municipal Code exterior noise standards, and stationary noise impacts from the proposed park would be *less than significant*.

The HVAC systems for Housing Project #2 are proposed to be screened from street view with a parapet wall and would be installed on the rooftop of the proposed student housing building's west and east wings on the northern portion of the site and the south wing in the center of the site, and on the rooftop of the affordable and supportive housing building on the western portion of the site. The proposed buildings' rooftop equipment would be 48 to 194 feet to the nearest sensitive receptor property line. Typical HVAC noise is 72 dBA at a distance of three feet. The height difference between the proposed buildings and noise-sensitive receptor buildings was factored into the overall distance, and the proposed parapet walls on each rooftop would provide at least 5 dBA of additional noise attenuation. Table 5.11-17, HVAC Mechanical Noise at Nearby Sensitive Receptors: Housing Project #2, shows the distances and resulting noise levels at the closest noise-sensitive receptors to each building. As shown in Table 5.11-17, HVAC noise would attenuate to 43 dBA or less at the surrounding noise-sensitive receptors, which is below the City of Berkeley Municipal Code's daytime and nighttime exterior noise standards of 55/45 dBA. Therefore, noise impacts from stationary noise would be *less than significant*.

TABLE 5.11-17 HVAC MECHANICAL NOISE AT NEARBY SENSITIVE RECEPTORS: HOUSING PROJECT #2

Receptor	Distance to Receiver, feet	Noise Level with Parapet Wall, dBA ^a	Exceeds Berkeley Daytime/Nighttime 55/45 dBA ^a Threshold?
Student Housing Building (East and West Wing)			
Historic, Residences to north	182	31	No
Historic, Place of worship to east	194	31	No
Student Housing Building (South Wing)			
Residences, Place of worship to south	87	38	No
Affordable and Supportive Housing			
Residences to west	48	43	No
Residences to north	50	43	No
Residences to south	85	38	No

Notes: See Appendix J, Noise Data, for distance calculations based on the inverse square law.

a. A-Weighted Decibel (dBA) is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear. Source: PlaceWorks, 2020.

Significance without Mitigation: Less than significant.

Construction Noise

Two types of short-term noise impacts could occur during construction: (1) mobile-source noise from the transport of workers, material deliveries, and debris/soil hauling and (2) stationary-source noise from use of construction equipment. Construction activities are anticipated to last approximately 18 months (see Chapter 3) and involve foundations, site preparation, grading, paving, building construction, and

architectural coating. Construction equipment would include, but is not limited to, concrete saws, dozers, tractors, loaders, backhoes, cranes, forklifts, pavers, rollers, pile drivers, and air compressors.

Construction Vehicles

The transport of workers and materials to and from the construction site would incrementally increase noise levels along local roadways. Individual construction vehicle pass-bys may create momentary noise levels of up to approximately 85 dBA (L_{\max}) at 50 feet from the vehicle.

Construction activity is anticipated to generate a combined 719 daily worker, vendor, and haul vehicle trips during the overlapping phases of demolition, building construction, pile driving, site preparation, grading, and trenching and hauling.¹⁵ Existing ADT along Dwight Way near the project site range from 5,650 trips to 12,820 trips. The addition of 719 daily worker, vendor, and haul trips to existing ADT along Dwight Way results in a temporary traffic noise increase of up to 0.5 dBA L_{dn} .

As shown previously on Table 5.11-8, Existing Traffic Noise: EIR Study Area, the existing noise levels along Dwight Way east and west of Telegraph Avenue range between approximately 60 dBA L_{dn} and 64 dBA L_{dn} . An impact would occur if construction trips resulted in a temporary increase of 3 dBA L_{dn} in an existing environment of 60 dBA L_{dn} to 65 L_{dn} . The temporary noise of up to 0.5 dBA L_{dn} from on-road construction vehicles would not exceed this threshold. Therefore, noise impacts from temporary construction-related trips would *be less than significant* at noise-sensitive receptors along the construction routes, and no mitigation measures would be required.

Construction Activities

As shown previously in Table 5.11-12, Construction Equipment Noise Emission Levels (dBA L_{\max}), noise levels would range between 73 dBA L_{\max} and 101 dBA L_{\max} at a distance of 50 feet. Pile driving may be necessary during construction of the proposed Housing Project #2. To estimate noise levels at nearby noise-sensitive receptors, the distance between the noise source and noise receiver is used to calculate additional spreading loss beyond the reference distance of 50 feet. Table 5.11-18, Construction Noise Levels at Nearby Receptors (dBA L_{\max}): Housing Project #2, shows the aggregate noise levels from pile driving, demolition, and grading at the property line of the nearest sensitive receptors. As shown in Table 5.11-18, noise levels would exceed the City of Berkeley's noise standards of 60 dBA L_{\max} on weekdays 7:00 a.m. to 7:00 p.m. and 50 dBA L_{\max} on weekends 9:00 a.m. to 8:00 p.m. (see Table 5.11-5, Maximum Construction Noise Levels (dBA L_{\max}): City of Berkeley). Therefore, construction noise impacts would be *potentially significant*.

¹⁵ Construction trips based on CalEEMod construction outputs.

TABLE 5.11-18 CONSTRUCTION NOISE LEVELS AT NEARBY RECEPTORS (dBA L_{MAX}): HOUSING PROJECT #2

	Residential Uses	Worship Uses	Worship and Residential Uses	Residential Uses	Greater than 60 dBA L _{max} and potentially significant?
Activity	67 feet to north	85 feet to east	230 feet to south	55 feet to west	
Pile Driving ^a	98	96	88	100	Yes
Activity	160 feet to north	500 feet to east	230 feet to south	<50 to west	--
Paving ^b	75	65	72	85	Yes
Activity	180 feet north	270 feet east	180 feet south	230 feet west	--
Grading ^c	74	70	74	72	Yes

Notes: Distance measured from the edge of construction to the nearest receptor property line. See Appendix J, Noise Data, of this Draft EIR. See Table 5.11-12, Construction Equipment Noise Emission Levels (dBA L_{max}), for the following assumptions:

a. Impact pile driver assumed for pile driving.

b. Vibratory roller assumed for paving.

c. Grader assumed for grading.

Source: Federal Highway Administration Roadway Construction Noise Model User's Guide (RCNM), 2006.

Impact: Same as Impact NOI-1.

Mitigation Measure: Same as Mitigation Measure NOI-1.

Significance with Mitigation: Significant and unavoidable. With implementation of Mitigation Measure NOI-1, grading and paving noise levels would attenuate up to 20 dBA, resulting in mitigated construction noise levels between 45 dBA L_{max} and 65 dBA L_{max} at the nearest sensitive receptors. However, the greatest reductions would occur at ground-floor and second-story receptors. Mitigation Measure NOI-1 would not be as effective for the multi-story residential uses to the north (Maximino Martinez Commons). The shrouding of pile driving equipment would attenuate pile driving noise levels by 10 dBA or more, resulting in mitigated construction noise levels of 90 dBA L_{max} or less. Therefore, construction noise could still exceed the City of Berkeley's daytime construction noise standards of 60 dBA L_{max} weekdays and 50 dBA L_{max} weekends at times, and temporary construction noise impacts would remain *significant and unavoidable*.

NOI-2	The proposed project could generate excessive groundborne vibration during construction activities.
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LRDP Update

Construction activity associated with projects within the EIR Study Area would generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground

strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures but can achieve the audible and perceptible ranges in buildings close to the construction site. Table 5.11-19, Reference Vibration Levels for Construction Equipment, lists typical vibration levels for common construction equipment.

TABLE 5.11-19 REFERENCE VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Approximate Vibration Level at 25 feet, PPV in/sec ^a	Approximate Vibration Level at 25 feet, VdB re 1 micro-in/sec ^b
Pile Driver, Impact (Upper Range)	1.518	112
Pile Driver, Impact (Typical)	0.644	104
Pile Driver, Sonic (Upper Range)	0.734	105
Pile Driver, Sonic (Typical)	0.170	93
Vibratory Roller	0.210	94
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Notes:

a. Peak Particle Velocity (PPV) = The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.

b. Vibration Decibel (VdB) = A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is one microinch per second (1×10^{-6} in/sec).

Source: Federal Transit Administration, 2018, Transit Noise and Vibration Impact Assessment.

Vibration Damage

As shown in Table 5.11-19, Reference Vibration Levels for Construction Equipment, vibration generated by construction equipment has the potential to be significant because it can exceed the thresholds of significance for architectural damage (e.g., 0.12 in/sec PPV for fragile or historical resources, 0.2 in/sec PPV for nonengineered timber and masonry buildings, and 0.3 in/sec PPV for engineered concrete and masonry).¹⁶ Construction details and specific equipment for future projects that implement the proposed LRDP Update, other than Housing Projects #1 and #2 (which are described below), are not known at this time, but may cause vibration impacts if equipment is close enough to sensitive receptors. As such, this would be a *potentially significant* impact.

Vibration Annoyance

Vibration that is perceptible to persons of normal sensitivity is prohibited in the city of Berkeley. As established in Section 5.11.2, Standards of Significance, 72 VdB is used as a threshold for potentially annoying

¹⁶ Federal Transit Administration. 2018, September, Transit Noise and Vibration Impact Assessment.

groundborne vibration at residences and places where people sleep, and 65 VdB where vibration could interfere with interior operations (such as laboratories with sensitive equipment).

As shown in Table 5.11-19, Reference Vibration Levels for Construction Equipment, vibration generated by construction equipment has the potential to be significant because it could exceed the thresholds of significance for both Housing Projects #1 and #2 and buildings where vibration could interfere with interior operations of off-site receptors. Future construction of projects within the scope of the proposed LRDP Update, other than Housing Projects #1 and #2 (which are described below), also have the potential to create vibration impacts, depending on the construction method and construction equipment, resulting in a *potentially significant* impact.

Impact NOI-2: Construction could result in excessive groundborne vibration to nearby sensitive receptors.

Mitigation Measure NOI-2: If any vibration causing construction activities/equipment are anticipated to be used for future development projects, UC Berkeley shall implement the following steps to ensure impacts from vibration causing construction activities/equipment will be less than significant.

- **Step 1 (Activity/Equipment Screening Distances):** UC Berkeley shall use the construction vibration screening standards shown below based on Federal Transit Administration criteria to determine if the construction activity/equipment is within the vibration screening distances that could cause building damage/human annoyance or sensitive equipment disturbance. If the construction activity/equipment is within the screening distance, then Step 2 (Alternative Methods/Equipment) shall be implemented.

Screening Distances to PPV in/sec Threshold: Building Damage			
Activity/Equipment	Reference Vibration Levels (in/sec PPV) at 25 feet	Screening Level Distance in feet for 0.20 in/sec PPV ^a	Screening Level Distance in feet for 0.12 in/sec PPV ^b
Pile Driving	1.518	97	136
Caisson Drilling	0.089	15	21
Vibratory Roller	0.21	26	37
Large Bulldozer	0.089	15	21
Screening Distance to VdB Threshold: Human Annoyance and Sensitive Equipment Disturbance			
Activity/Equipment	Reference Vibration Levels (VdB) at 25 feet	Screening Level Distance in feet for 72 VdB ^c	Screening Level Distance in feet for 65 VdB ^d
Pile Driving	112	520	890
Caisson Drilling	87	80	140
Vibratory Roller	94	140	240
Large Bulldozer	87	80	140

Notes: Peak Particle Velocity inches per second (PPV in/sec); Vibration Decibel (VdB).

a. FTA Building Category III, Non-engineered timber and masonry buildings (residential).

b. FTA Building Category IV, Buildings extremely susceptible to vibration damage (historic).

c. FTA Land Use Category 2, Residences and buildings where people normally sleep.

d. FTA Land Use Category 1, Buildings where vibration would interfere with interior operations.

Source: Federal Transit Administration, 2018, Transit Noise and Vibration Impact Assessment.

- **Step 2 (Alternative Methods/Equipment):** When the anticipated vibration-causing construction activity/equipment is within the screening standards in Step 1 (Activity/Equipment Screening Distances), UC Berkeley shall consider whether alternative methods/equipment are available and shall verify that the alternative method/equipment is shown on the construction plans prior to the beginning of construction. Alternative methods/equipment may include, but are not limited to:
 - For pile driving, the use of caisson drilling (drill piles) vibratory pile drivers, oscillating or rotating pile installation methods, and jetting or partial jetting of piles into place using a water injection at the tip of the pile shall be used, where feasible.
 - For paving, use of a static roller in lieu of a vibratory roller shall be implemented.
 - For grading and earthwork activities, off-road equipment that shall be limited to 100 horsepower or less.

Where alternative methods/equipment to vibration causing activities/equipment are not feasible, then Step 3 (Construction Vibration Monitoring Program) shall be implemented.

- **Step 3 (Construction Vibration Monitoring Program):** Prior to any project-related excavation, demolition or construction activity for projects within the screening distances listed in Step 1 (Activity/Equipment Screening Distances) and where alternative methods/equipment to vibration causing activities/equipment are not feasible pursuant to Step 2 (Alternative Methods/Equipment), UC Berkeley shall prepare a construction vibration monitoring program. The program shall be prepared and implemented by a qualified acoustical consultant or structural engineer. Where the vibration sensitive receptors are historic resources, the program shall be prepared and implemented by a structural engineer with a minimum of five years of experience in the rehabilitation and restoration of historic buildings and a historic preservation architect meeting the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, Professional Qualifications Standards. The program shall include the following:
 - Prepare an existing conditions study to establish the baseline condition of the vibration sensitive resources in the form of written descriptions with a photo survey, elevation survey, and crack-monitoring survey for the vibration-sensitive building or structure. The photo survey shall include internal and external crack monitoring in the structure, settlement, and distress, and document the condition of the foundation, walls and other structural elements in the interior and exterior of the building or structure. Surveys will be performed prior to, in regular intervals during, and after completion of all vibration-generating activity. Where receptors are historic resources, the study shall describe the physical characteristics of the resources that convey their historic significance.
 - Determine the number, type, and location of vibration sensors and establish a vibration velocity limit (as determined based on a detailed review of the proposed building), method (including locations and instrumentation) for monitoring vibrations during construction, and method for alerting responsible persons who have the authority to halt construction should limits be exceeded or damaged observed.
 - Perform monitoring surveys prior to, in regular intervals during, and after completion of all vibration-generating activity and report any changes to existing conditions, including, but not limited to, expansion of existing cracks, new spalls, other exterior deterioration, or any problems with character-defining features of a historic resource are discovered. UC Berkeley shall establish the frequency of monitoring and reporting, based upon the recommendations of

the qualified acoustical consultant or structural engineer or if there are historic buildings, the historic architect and structural engineer. Monitoring reports shall be submitted to UC Berkeley's designated representative responsible for construction activities.

- Develop a vibration monitoring and construction contingency plan, which shall identify where monitoring would be conducted, establish a vibration monitoring schedule, define structure-specific vibration limits, and require photo, elevation, and crack surveys to document conditions before and after demolition and construction activities. Construction contingencies would be identified for when vibration levels approach the limits. If vibration levels approach limits, suspend construction and implement contingencies to either lower vibration levels or secure the affected structure.
- Report substantial adverse impacts to vibration sensitive buildings including historic resources related to construction activities that are found during construction to UC Berkeley's designated representative responsible for construction activities. UC Berkeley's designated representative shall adhere to the monitoring team's recommendations for corrective measures, including halting construction or using different methods, in situations where demolition, excavation/construction activities would imminently endanger historic resources. UC Berkeley's designated representative would respond to any claims of damage by inspecting the affected property promptly, but in no case more than five working days after the claim was filed and received by UC Berkeley's designated representative. Any new cracks or other damage to any of the identified properties will be compared to pre-construction conditions and a determination made as to whether the proposed project could have caused such damage. In the event that the project is demonstrated to have caused any damage, such damage would be repaired to the pre-existing condition. Site visit reports and documents associated with claims processing would be provided to the relevant government body with jurisdiction over the neighboring historic resource, as necessary.
- Conduct a post-survey on the structure where either monitoring has indicated high levels or complaints of damage and make appropriate repairs where damage has occurred as a result of construction activities.
- Prepare a construction vibration monitoring report that summarizes the results of all vibration monitoring and submit the report after the completion of each phase identified in the project construction schedule. The vibration monitoring report shall include a description of measurement methods, equipment used, calibration certificates, and graphics as required to clearly identify vibration-monitoring locations. An explanation of all events that exceeded vibration limits shall be included together with proper documentation supporting any such claims. The construction vibration monitoring report shall be submitted to UC Berkeley with two weeks upon completion of each phase identified in the project construction schedule.
- Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person shall be clearly posted in one or more locations at the construction site.

Significance with Mitigation: Less than significant.

Housing Project #1

Vibration Damage

As described under impact discussion NOI-1, preliminary construction estimates for Housing Project #1 were prepared for the purpose of evaluating the project under CEQA. While the site plans are preliminary for the purposes of CEQA, this analysis conservatively assumes that pile driving would be required for Housing Project #1 because it has the greatest potential for vibration damage, as demonstrated in Table 5.11-19, Reference Vibration Levels for Construction Equipment. Since no parking lots or driveways are proposed for Housing Project #1, paving activity is anticipated to be minimal. Further, because Housing Project #1 includes two subterranean levels, grading is also anticipated to be minimal. Table 5.11-20, Vibration Levels (PPV) from Typical Construction Equipment: Housing Project #1, summarizes vibration levels for typical construction equipment that may be used for the proposed project at a reference distance of 25 feet.

TABLE 5.11-20 VIBRATION LEVELS (PPV) FROM TYPICAL CONSTRUCTION EQUIPMENT: HOUSING PROJECT #1

Equipment	Reference Vibration Level PPV (in/sec) at 25 feet	PPV (in/sec) at Residential Building 65 feet north	PPV (in/sec) at Academic Building ^a 150 feet east	PPV (in/sec) at Academic Building 100 feet south	PPV (in/sec) at Residential Building 60 feet west
Pile Driver	1.518	0.362	0.103	0.190	0.408
Clam Shovel	0.20	0.048	0.014	0.025	0.054
Hoe Ram	0.089	0.021	0.006	0.011	0.024
Large Bulldozer	0.089	0.021	0.006	0.011	0.024
Caisson Drilling	0.089	0.021	0.006	0.011	0.024
Loaded Trucks	0.076	0.018	0.005	0.010	0.020
Jackhammer	0.035	0.008	0.002	0.004	0.009
Small Bulldozer	0.003	0.001	<0.001	<0.001	0.001
Vibratory Roller	0.210	0.050	0.014	0.026	0.056

Notes:

- Peak Particle Velocity (PPV). The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.
- Distances are measured from the edge of proposed building to the nearest sensitive receptor building façade.

a. The academic building (Li Ka Sing Center for Biomedical and Health Sciences) is assumed to have sensitive laboratory equipment.

Source: Federal Transit Administration. 2018, September. Transit Noise and Vibration Impact Assessment.

As shown on Table 5.11-20, construction equipment can generate vibration levels ranging up to 1.518 in/sec PPV at 25 feet for pile driving, however typical equipment for paving and grading (vibratory roller and bulldozers) can generate vibration levels ranging up to 0.210 in/sec PPV at 25 feet.

There are no nearby historic buildings or structures that would be subject to vibration damage during construction of Housing Project #1. The nearest non-historical structures to proposed construction activities is the residential building currently under construction (Modera Acheson Commons), which is approximately 60 feet to the west, and the existing residential building, which is approximately 65 feet to

the north. As shown in Table 5.11-20, construction vibration is projected to reach up to 0.408 in/sec PPV at the residential building to the west and 0.362 in/sec PPV at the residential building to the north due to pile driving, if required. The construction vibration 0.2 in/sec PPV threshold for building damage could be exceeded at these two locations. Accordingly, building damage from construction vibration is considered *potentially significant* if pile driving is required.

Vibration Annoyance

A significant impact would occur if vibration levels would exceed 72 VdB at residences or places where people sleep or exceed 65 VdB at locations with potentially sensitive laboratory equipment.

For potential annoyance, vibration levels are calculated using the spatially averaged distances from the construction site to the nearest receptor building facade. Because equipment would be mobile throughout the site, the center of construction activities best represents the potential average construction vibration levels at the various sensitive receptors. In the case of pile driving, which is stationary, the distance from the edge of the nearest proposed building to the sensitive receptor building facade is used. Table 5.11-21, Vibration Levels (VdB) of Project Construction Equipment: Housing Project #1, shows FTA reference VdB levels for typical construction equipment and the estimated vibration levels at nearby sensitive receptors.

TABLE 5.11-21 VIBRATION LEVELS (VdB) OF PROJECT CONSTRUCTION EQUIPMENT: HOUSING PROJECT #1

Equipment	FTA Reference	VdB at Nearest Sensitive Receptor			Greater than 72 VdB at Residential Buildings and Potentially Significant?	Greater than 65 VdB at Academic Building and Potentially Significant?
		Residential Building	Academic Building ^a	Residential Building		
Pile Driving^b	25 feet	65 feet north	150 feet east	60 feet west		
Impact Pile Driver	112	100	89	101	Yes	Yes
All Other Equipment^c	25 feet	180 feet north	230 feet east	140 feet west		
Hoe Ram	87	61	58	65	No	No
Large Bulldozer	87	61	58	65	No	No
Caisson Drilling	87	61	58	65	No	No
Loaded Trucks	86	60	57	64	No	No
Jackhammer	79	53	50	57	No	No
Small Bulldozer	58	32	29	36	No	No
Vibratory Roller	94	68	65	72	No	No

Notes: Vibration Decibel (VdB). A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is one microinch per second (1×10^{-6} in/sec).

a. The academic building (Li Ka Sing Center for Biomedical and Health Sciences) is assumed to have sensitive laboratory equipment.

b. Measured from the edge of proposed building to the nearest sensitive receptor building facade.

c. Measured from the center of the site to the nearest sensitive receptor building facade.

Source: Federal Transit Administration, 2018, Transit Noise and Vibration Impact Assessment.

If the use of a pile driver is required for Housing Project #1, Table 5.11-21 shows that vibration levels could exceed the threshold of 72 VdB at the residential building currently under construction (Modera Acheson Commons) to the west and at the existing residential building to the north. In addition, the use of a pile driver could exceed the threshold of 65 VdB at the academic building (Li Ka Sing Center for Biomedical and Health Sciences) to the east. All other equipment would attenuate to 65 VdB or less at the academic building and 72 VdB or less at residential buildings. Accordingly, if pile driving is required, impacts would be *potentially significant*.

Impact: Same as Impact NOI-2.

Mitigation Measures: Same as Mitigation Measure NOI-2.

Significance with Mitigation: Less than significant. Step 1 (Activity/Equipment Screening Distances) of Mitigation Measure NOI-2 requires UC Berkeley to use construction vibration screening standards to determine if construction activities and equipment are within vibration screening distances that could cause building damage/human annoyance or sensitive equipment disturbance. Through the preparation of this EIR, Step 1 of Mitigation Measure NOI-2 has already been completed for Housing Project #1, and only Step 2 and Step 3 would be required to address vibration impacts at the nearby residential buildings to the north and west, and the academic building to the east if pile driving is required. If no pile driving is required, then impacts would be less than significant and no mitigation would be required.

Housing Project #2

Vibration Damage

As described under impact discussion NOI-1, preliminary construction estimates for Housing Project #2 were prepared for the purpose of evaluating the project under CEQA. While the site plans are preliminary for the purposes of CEQA, this analysis conservatively assumes that pile driving would be required for Housing Project #2 because it has the greatest potential for vibration damage, as demonstrated in Table 5.11-19, Reference Vibration Levels for Construction Equipment. In addition, Housing Project #2 would include a larger area for grading and surface paving. Therefore, this discussion is organized by pile driving, paving, and grading activities since they have the greatest potential to cause vibration impacts.

Pile Driving

Housing Project #2 may require pile driving for the building support columns of the student housing and, affordable and supportive housing buildings; however, pile driving at the affordable and supportive housing is less likely given this building is proposed to be five stories above ground. This analysis assumes that piles would be driven at the foundation columns of these two buildings. The upper range of vibration levels generated by impact pile drivers is 1.518 in/sec PPV at a distance of 25 feet.

The nearest nonhistorical structure to the foundation columns is 55 feet to the west (residences) of the affordable and supportive housing building, and the nearest historic building to the foundation columns is 75 feet to the north (Anna Head Alumnae Hall) of the student housing building. Table 5.11-22, Vibration Levels for Impact Pile Driving Activity: Housing Project #2, shows the estimated vibration levels at the

nearest receptors. As shown in Table 5.11-22, construction vibration would exceed the construction vibration 0.2 in/sec PPV threshold for nearby non-historical and exceed the 0.12 in/sec PPV threshold for nearby historical structures. Accordingly, building damage from construction vibration is considered *potentially significant*, if pile driving is required.

TABLE 5.11-22 VIBRATION LEVELS FOR IMPACT PILE DRIVING ACTIVITY: HOUSING PROJECT #2

Reference Levels	Distance in feet	PPV (in/sec)	Greater Than 0.20 in/sec PPV and Potentially Significant?	Greater Than 0.12 in/sec PPV and Potentially Significant?
FTA Reference	25	1.518	NA	NA
Nearest Sensitive Receptors ^a				
Anna Head Alumnae Hall and residences to the north ^{b, c}	75	0.292	Yes	Yes
Vedanta Society to the east ^b	93	0.212	NA	Yes
First Church of Christ, Scientist to the east ^b	100	0.190	NA	Yes
Residential structures to the south	225	0.056	No	NA
First Baptist Church to the south ^b	250	0.048	NA	No
Residential structure to the west	55	0.465	Yes	NA

Notes: NA = not applicable, PPV (in/sec) = inches per second peak particle velocity. See Appendix J, Noise Data, of this Draft EIR.

a. Distance measured from the nearest proposed foundation column to sensitive receptor (structure).

b. Nearest sensitive receptors in this direction are historical buildings and a vibration threshold of 0.12 in/sec is applicable.

c. The distance to Anna Head Alumnae Hall is approximately the same or less than the nearest nonhistorical structure where 0.20 in/sec PPV threshold applies.

Source: Federal Transit Administration (FTA), 2018, Transit Noise and Vibration Impact Assessment.

Paving

Housing Project #2 proposes a parking lot and driveway in the rear of the affordable and supportive housing building along the western boundary of the project, which is anticipated to use a vibratory roller for paving. Vibratory rollers typically generate vibration levels of 0.21 in/sec PPV at a distance of 25 feet. The nearest historical building to paving activity is the Anna Head Alumnae Hall northeast of the proposed driveway and rear parking, at a distance of approximately 160 feet, which is greater than the screening distance of 37 feet (see the screening distances in Mitigation Measure NOI-2). Therefore, vibration impacts to historical structures due to paving would be *less than significant*.

The nearest nonhistorical structures to proposed paving would be within approximately 10 feet to the west (as measured from the nearest edge of paving to sensitive receptor). At a distance of 10 feet, a vibratory roller would generate levels of up to 0.30 in/sec PPV, which would exceed the threshold of 0.2 in/sec PPV. Accordingly, impacts from paving are *potentially significant*. At the next closest receptor (60 feet to the north), vibration levels would be up to 0.056 in/sec PPV, which would not exceed the significance threshold.

Grading

Table 5.11-23, Vibration Levels for Grading Equipment: Housing Project #2, shows typical vibration levels for construction equipment used for grading and the estimated vibration levels at the nearest sensitive

receptors. Bulldozers would be associated with grading activity. The nearest receptors are residential buildings to the west within approximately 10 feet of grading activity. As shown in Table 5.11-23, construction vibration during grading activity could reach up to 0.352 in/sec PPV, which would exceed the threshold of 0.20 in/sec PPV. Accordingly, impacts would be *potentially significant*.

TABLE 5.11-23 VIBRATION LEVELS FOR GRADING EQUIPMENT: HOUSING PROJECT #2

Equipment	PPV (in/sec) at Nearest Sensitive Receptor ^a					Greater than 0.20 in/sec PPV and Potentially Significant?	Greater than 0.12 in/sec PPV and Potentially Significant?
	At 25 feet	Residential and Historical 50 feet north ^b	Worship and Historical 95 feet east ^b	Worship, Historical, and Residential 50 feet south ^b	Residential < 10 feet west ^c		
Large Bulldozer	0.089	0.031	0.012	0.031	0.352	Yes ^c	NA ^c
Small Bulldozer	0.003	0.001	<0.001	0.001	0.012	No	No

Notes: NA = not applicable, PPV = peak particle velocity. See Appendix J, Noise Data, of this Draft EIR.

a. Distance measured from the nearest edge of construction site to sensitive receptor (structure).

b. Distance to a historical and nonhistorical receptor is the same, or where the distance to nearest non-historical receptor is closer than the historical receptor in that direction, the closer distance is applied to the historical receptor to provide a conservative analysis.

c. Nonhistorical receptors to the west.

Source: Federal Transit Administration, 2018, Transit Noise and Vibration Impact Assessment.

Vibration Annoyance

A significant impact would occur if vibration levels would exceed 72 VdB at nearby sensitive receptors. There are no buildings with sensitive laboratory equipment, such as optical microscopes, in the vicinity of Housing Project #2. For potential annoyance, vibration levels are calculated using the spatially averaged distances from the construction activity to the nearest receptor building façade. Because equipment would be mobile throughout the site, the center of construction activities best represents the potential average construction vibration levels at the various sensitive receptors. In the case of pile driving, which is stationary, the distance from the nearest foundation column to the sensitive receptor building façade is used. Table 5.11-24, Vibration Levels (VdB) of Project Construction Equipment: Housing Project #2, shows FTA reference VdB levels for typical construction equipment and the estimated vibration levels at nearby sensitive receptors.

As shown in Table 5.11-24, vibration levels could exceed the 72 VdB threshold at various receptors during pile driving and paving. Grading activity is not projected to exceed the 72 VdB threshold. Accordingly, impacts would be *potentially significant*.

Impact: Same as Impact NOI-2.

Mitigation Measures: Same as Mitigation Measure NOI-2.

Significance with Mitigation: Less than significant. Step 1 (Activity/Equipment Screening Distances) of Mitigation Measure NOI-2 requires UC Berkeley to use construction vibration screening standards to determine if construction activities and equipment are within vibration screening distances that could

cause building damage/human annoyance or sensitive equipment disturbance. Through the preparation of this EIR, Step 1 of Mitigation Measure NOI-2 has already been completed for Housing Project #2, and only Step 2 and Step 3 would be required to address vibration impacts at the nearby sensitive receptors from grading and if pile driving or use of a vibratory roller for paving are required.

TABLE 5.11-24 VIBRATION LEVELS (VdB) OF PROJECT CONSTRUCTION EQUIPMENT: HOUSING PROJECT #2

Activity/Equipment	VdB at Nearest Sensitive Receptor ^a					Greater than 72 VdB and Potentially Significant?
	FTA Reference at 25 feet	67 feet north	85 feet east	230 feet south	55 feet west	
Foundation/Impact Pile Driving	112	99	96	83	102	Yes
Activity/Equipment	FTA Reference at 25 feet	160 feet north	500 feet to east	230 feet south	<10 feet to west	--
Paving/Vibratory Roller	94	70	55	65	106	Yes
Activity/Equipment	FTA Reference at 25 feet	180 feet north	270 feet east	180 feet south	230 feet west	--
Grading/Large Bulldozer	87	61	56	61	58	No
Grading/Small Bulldozer	58	32	27	32	29	No

Notes: VdB re 1 micro-in/sec. RMS (root mean squared) velocity; See Appendix J, Noise Data, of this Draft EIR.

a. Distance measured from the center of activity to sensitive receptor property line, except for pile driving. Pile driving is measured from the nearest sensitive receptor to the nearest proposed foundation column.

Source: Federal Transit Administration, 2018, Transit Noise and Vibration Impact Assessment.

NOI-3	The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to construction noise.
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LRDP Update

Traffic Noise

A significant cumulative traffic noise increase would occur if project traffic were calculated to contribute 1 dBA or more under Cumulative Plus Project conditions to a significant traffic noise increase over existing conditions. That is, if a cumulative traffic noise increase of greater than the 1.5 dBA, 3 dBA, and 5 dBA is calculated, and the relative contribution from project traffic is calculated to contribute 1 dBA or more to this cumulative impact, it would be considered cumulatively considerable. As shown in Table 5.11-11, Traffic Noise Increases: EIR Study Area, traffic noise would increase up to 2.5 dBA L_{dn} along Addison Street from Shattuck Avenue to Oxford Street under cumulative 2040 conditions. Traffic noise increases along all other roadway segments would be less than 1.5 dBA L_{dn} . The existing noise environment along Addison Street is 55 dBA L_{dn} , so the 5 dBA increase threshold would apply. The traffic noise increase along Addison Street would not exceed the threshold of significance, and the cumulative traffic noise increases would be *less than significant*.

Construction

If the construction of potential future projects that implement the proposed LRDP Update were to overlap with cumulative projects in the vicinity, construction noise could combine to result in significant cumulative impacts. The specific vicinity impacted by cumulative construction would likely shift as projects are completed and new projects begin. Since specific construction details, such as phasing schedules, are not known at this time for cumulative projects under the proposed LRDP Update and City of Berkeley projects, cumulative construction noise, like Impact NOI-1, may result in *significant* temporary noise impacts.

Impact NOI-3: The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to construction noise.

Mitigation Measure NOI-3: Implement Mitigation Measure NOI-1.

Significance with Mitigation: Significant and unavoidable. With implementation of Mitigation Measure NOI-1, the effective use of temporary noise barriers can achieve up to 20 dBA of noise reduction. However, noise barriers would achieve the greatest reductions at ground-floor receptors and may not be as effective for residential, classroom, or commercial buildings with multiple stories. CBP NOI-2 would require that alternatives to pile driving be used where possible. Because construction activities associated with future projects may occur near noise-sensitive receptors, and because, depending on the project type, equipment list, time of day, phasing, and overall construction duration of cumulative projects, noise disturbances may occur for prolonged periods of time, during the more sensitive nighttime hours, or may exceed UC Berkeley's adopted construction noise standards even with project-level mitigation, cumulative construction noise impacts are considered *significant and unavoidable*.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. Cumulative traffic noise impacts are incorporated into the analysis of the proposed LRDP Update under impact discussion NOI-1. In terms of cumulative construction impacts, there are many UC Berkeley and City of Berkeley cumulative projects in the immediate vicinity of both Housing Projects #1 and #2 (see Table 5-2, Pending Projects in the City of Berkeley, and Table 5-3, Pending UC Berkeley Projects). Due to the fact that specific construction details, such as phasing schedules, are not known at this time for cumulative proposed LRDP Update projects and City of Berkeley projects, cumulative construction noise, like Impact NOI-1, may result in significant temporary noise impacts.

Impact: Same as Impact NOI-3.

Mitigation Measure: No feasible mitigation measures are available to reduce this impact to a less-than-significant level.

Significance with Mitigation: Significant and unavoidable. The effective use of temporary noise barriers can achieve up to 20 dBA of noise reduction. However, noise barriers would achieve the greatest reductions at ground-floor receptors and may not be as effective for residential, classroom, or

commercial buildings with multiple stories. CBP NOI-2 would require that alternatives to pile driving be used where possible. Because construction activities associated with future projects may occur near noise-sensitive receptors, and because, depending on the project type, equipment list, time of day, phasing, and overall construction duration of cumulative projects, noise disturbances may occur for prolonged periods of time, during the more sensitive nighttime hours, or may exceed UC Berkeley's adopted construction noise standards even with project-level mitigation, cumulative construction noise impacts are considered *significant and unavoidable*.

5.12 POPULATION AND HOUSING

This chapter describes the potential population and housing impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential population and housing impacts, and identifies feasible mitigation measures that could mitigate any potentially significant impacts.

Place of residence data referenced in this chapter are included as Appendix K, Place of Residence Data, of this draft environmental impact report (Draft EIR).

5.12.1 ENVIRONMENTAL SETTING

5.12.1.1 REGULATORY FRAMEWORK

There are no federal regulations regarding population and housing relevant to the proposed project.

State

The California Master Plan for Higher Education, adopted in 1960 and amended by subsequent policy, serves as an expression of the State's major higher education goals. Among other things, the Master Plan assigns missions to the different higher education systems (University of California [UC], California State University, and California Community College) and establishes eligibility targets for incoming UC freshmen and transfer students.¹ The Master Plan is still a governing document, but many of its significant principles have also been adopted in statute.

California Education Code

The California Education Code contains several provisions mandating enrollment access levels.

- Section 66011(a) of the California Education Code provides that “all resident applicants to California institutions of public higher education, who are determined to be qualified by law or by admission standards established by the respective governing boards, should be admitted to either (1) a district of the California Community Colleges, in accordance with Section 76000, (2) the California State University, or (3) the University of California.”²
- Section 66202.5 of the Education Code states the following: “The State of California reaffirms its historic commitment to ensure adequate resources to support enrollment growth, within the

¹ University of California Office of the President, <https://www.ucop.edu/institutional-research-academic-planning/content-analysis/academic-planning/california-master-plan.html>, accessed October 21, 2020.

² California Education Code, Section 66011(a), https://leginfo.ca.gov/faces/codes_displaySection.xhtml?lawCode=EDC§ionNum=66011, accessed October 20, 2020.

systemwide academic and individual campus plans to accommodate eligible California freshmen applicants and eligible California Community College transfer students, as specified in Sections 66202 and 66730. The University of California and the California State University are expected to plan that adequate spaces are available to accommodate all California resident students who are eligible and likely to apply to attend an appropriate place within the system.”³

- Section 66741 of the California Education Code requires acceptance of qualified transfer students at the advanced standing level.⁴

California Government Code

Section 7260 et seq. of the California Government Code requires all public entities to adopt rules and regulations to administer relocation assistance to all persons displaced by the public entity.⁵ Further, assistance policies must provide for fair, uniform, and equitable treatment.⁶ The code specifies that displaced persons are entitled to payment for actual moving and related expenses.⁷

California Public Resources Code

Under Section 21080.09(b) of the California Public Resources Code, the environmental effects relating to changes in enrollment are to be considered for each campus or medical center of public higher education in the EIR prepared for the LRDP of the campus or medical center. California Public Resources Code Section 21080.09(d) states:

Compliance with this section satisfies the obligations of public higher education pursuant to this division to consider the environmental impact of academic and enrollment plans as they affect campuses or medical centers, provided that any such plans shall become effective for a campus or medical center only after the environmental effects of those plans have been analyzed as required by this division in a long range development plan environmental impact report or tiered analysis based upon that environmental impact report for that campus or medical center, and addressed as required by this division.

³ California Education Code, Section 66202.5, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=EDC§ionNum=66202.5, accessed October 20, 2020.

⁴ California Education Code, Section 66741, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=EDC§ionNum=66741, accessed October 20, 2020.

⁵ California Government Code, Section 7267.8, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV§ionNum=7267.8, accessed December 13, 2020.

⁶ California Government Code, Section 7260.5, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV§ionNum=7260.5, accessed December 13, 2020.

⁷ California Government Code, Section 7262, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV§ionNum=7262, accessed December 13, 2020.

Housing and Community Development Relocation and Assistance Real Property Acquisition Guidelines

California Code of Regulations, Section 6000 et seq., was adopted pursuant to Section 7260 et seq. of the California Government Code to implement, interpret, and make provisions of Section 7260 et seq. relating to relocation assistance, last resort housing, and real property acquisition. Section 6038 provides information on the Department of Housing and Community Development's Model Relocation Plan, which is applicable to projects relocating 15 or fewer households.⁸

University of California

Each university within the UC and California State University systems provides a varying amount of university housing. The State of California does not plan, budget, or direct a set amount of planned or desired housing for universities. Rather, each UC university plans for and provides student housing based on local housing markets, historical construction rates, availability of university land and infrastructure, and student needs related to housing type, location, and affordability.⁹

UC Enrollment Planning

The University of California Office of the President (UCOP) coordinates a range of activities across the UC system that enable UC and the State to fulfill their respective commitments to admitting, enrolling, and graduating students from the UC system. Each year, working in close coordination with the 10 UC universities, UCOP collects existing and projected enrollment data as well as short- and long-term plans for the numbers and types of students that can be accommodated at each campus in the UC system. Based on these plans and data, and in consideration of the capacity of each campus, UCOP develops annual enrollment targets for each university to ensure UC is meeting its commitments to the State.

Periodically, the UC conducts long-range enrollment planning to comprehensively assess enrollment-related issues such as workforce needs, academic programs, and the ability of UC facilities to meet future needs. The last Long Range Enrollment Plan was prepared in 2008 and outlined plans for a 13-year period. UCOP is currently developing a new plan, which will examine the physical, academic, and financial capacity to increase enrollment of undergraduate California residents and graduate population at systemwide and individual university levels.¹⁰

⁸ California Code of Regulations, Section 6038, <https://govt.westlaw.com/calregs/Document/IA95FC1E0D45411DEB97CF67CDoB99467?viewType=FullText&originationContext=documenttoc&transitionType=DocumentItem&contextData=%28sc.Default%29>, accessed December 13, 2020.

⁹ University of California Davis, 2018, 2018 Long Range Development Plan Final Environmental Impact Report, page 3.13-2.

¹⁰ University of California Office of the President, <https://www.ucop.edu/institutional-research-academic-planning/content-analysis/academic-planning/enrollment-planning.html>, accessed October 20, 2020.

UC Auxiliary Enterprise Policy

Housing at UC Berkeley is an auxiliary enterprise. The University of California Accounting Manual states that auxiliary enterprises shall “bear all direct costs and, to the extent required under the University’s direct costing policies, a share of their own indirect costs, such as utilities, custodial services, and other maintenance and business services.”¹¹ In other words, the entire cost of housing construction, operation, and maintenance must be supported by rents and other revenues. The desire to improve the amount and quality of housing must therefore be balanced by the need to keep rents at reasonable levels and avoid building surplus capacity. The housing targets established in the proposed LRDP Update are therefore subject to future adjustments to reflect changes in market conditions and demand for university housing.

UC Relocation Assistance Act Policy for Real Estate Acquisitions and Leases

The UC’s Relocation Assistance Act Policy for Real Estate Acquisitions and Leases, effective May 1, 2013, applies to situations in which people or businesses are required to vacate property as a result of acquisition or lease by the UC Regents. The policy is intended to implement State regulations and guidelines addressing relocation assistance. The policy establishes that, for residential projects of 15 or fewer households, the UC may complete the Department of Housing and Community Development’s Model Relocation Plan, which shows the required contents of a relocation plan. The policy also establishes minimum requirements related to noticing displaced persons (with timelines), survey and analysis of relocation needs, payment of moving expenses, relocation payments (typically not to exceed \$5,250), and other aspects of relocation assistance. The policy also includes procedures for providing last-resort housing in the event that comparable replacement housing is not available or is not available within the monetary limits established in the Government Code.

Regional

Association of Bay Area Governments Projections 2040

The Association of Bay Area Governments (ABAG) is the official comprehensive planning agency for the San Francisco Bay region, which is composed of the nine counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma, and contains 101 jurisdictions. ABAG produces growth forecasts on four-year cycles for use by other regional agencies, including the Metropolitan Transportation Commission and the Bay Area Air Quality Management District, for project funding and regulatory decisions. The general plans, zoning regulations, and growth management programs of local jurisdictions inform the ABAG projections. The ABAG projections are also developed to reflect the impact of “smart growth” policies and incentives that could be used to shift development patterns from historical trends toward a better jobs-housing balance, increased preservation of open space, and greater development and redevelopment in urban core and transit-accessible areas throughout the ABAG region.

¹¹ University of California, Business and Finance Bulletin, BUS-72, Establishment of Auxiliary Enterprises, page 2, <https://policy.ucop.edu/doc/3410196/AM-A783-1>, accessed October 20, 2020.

Plan Bay Area

As described in Chapter 5, Environmental Analysis, of this Draft EIR, Plan Bay Area serves as the Bay Area's Regional Transportation Plan/Sustainable Community Strategy. Priority Development Areas and Transit Priority Areas provide an implementing framework for Plan Bay Area. Figure 5-1, Priority Development Areas and Transit Priority Areas, shows the Priority Development Areas and Transit Priority Areas that overlap with the EIR Study Area. Overall, well over two-thirds of all regional growth in the Bay Area by 2040 is allocated within Priority Development Areas.¹² While Plan Bay Area 2040 distributes future growth across the Bay Area region to meet its greenhouse gas emissions reduction, housing, and other performance targets, it does not override local land use control. Cities and counties, not the Metropolitan Transportation Commission or ABAG, are ultimately responsible for the manner in which their local communities continue to be built out in the future. For this reason, cities and counties are not required to revise their land use policies and regulations, including in general plans, to be consistent with the regional transportation plan or an alternative planning strategy.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the cities of Berkeley and Oakland, related to population and housing that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

Berkeley General Plan

The City of Berkeley General Plan addresses population and housing relevant to the proposed project, some of which is specific to UC Berkeley. The Housing (H) Element of the City of Berkeley General Plan includes the following relevant objective, policy, and actions:

- Objective 5: Relationship with Other Institutions. The City should continue working with the Berkeley Housing Authority and the University of California to address affordable housing needs.
- Policy H-21: University of California. Urge the University of California to maximize the supply of appropriately located, affordable housing for its students and also to expand housing opportunities for faculty and staff.

¹² Bay Area Air Quality Management District, 2017, Final 2017 Clean Air Plan, Spare the Air, Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area, <http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans>, accessed on March 18, 2019.

- Action A: Encourage and promote construction of additional housing for students, staff and faculty, particularly family housing, within walking distance of campus and work with the university, private developers and nonprofits to increase the supply of affordable housing for faculty and staff. Encourage the university to undertake private/public partnerships such that this housing pays its fair share of taxes towards meeting City service needs.
- Action B: Encourage development of satellite housing near transit more distant from the campus (including other municipalities).
- Action C: Work with other jurisdictions to advocate for changes in state legislation that would: 1) require the University of California to provide adequate housing for students and minimize housing impacts in the area from the university; and 2) count University-provided beds towards our regional housing needs assessment.
- Action D: Encourage the university and other institutions to maintain residential uses in residential buildings, convert back to residential use residential buildings that have been converted to non-residential use when appropriate, and convert to residential use any unused buildings and underutilized sites where appropriate.

Oakland General Plan

The City of Oakland Housing Element includes policies encouraging housing for all income levels, housing preservation, and sustainable development. It does not contain any policies specific to UC Berkeley.

5.12.1.2 EXISTING CONDITIONS

LRDP Update

UC Berkeley influences population growth and distribution in Berkeley, Oakland, and surrounding cities in two ways: by changes in enrollment and changes in employment. This section describes existing and projected UC Berkeley enrollment and employment within the local and regional population and employment context.

City and regional baseline data on population, households, and employment were obtained primarily from ABAG's Projections 2040. According to ABAG, population at UC Berkeley is indirectly accounted for and is not formally coordinated between the university and ABAG.¹³ Except where otherwise noted, all projections of future city and regional conditions are from Projections 2040. This analysis does not utilize population projections from the City of Berkeley's General Plan EIR because the City of Berkeley's General Plan EIR does not project beyond 2020.¹⁴ City and regional baseline data on housing characteristics were obtained from the State of California Department of Finance's estimates, unless otherwise noted.

¹³ Michael Reilly, Principal, Planning, Bay Area Metro, Association of Bay Area Governments, Metropolitan Transportation Commission, Email correspondence with Physical & Environmental Planning, UC Berkeley, February 2, 2021.

¹⁴ City of Berkeley, 2001, Berkeley Draft General Plan EIR, Table IV.B-1, https://www.cityofberkeley.info/Planning_and_Development/Home/BERKELEY_DRAFT_GENERAL_PLAN_EIR__4B__POPULATION,_EMPLOYMENT_AND_HOUSING.aspx, accessed November 10, 2020.

Population

Local and Regional Population

Table 5.12-1, City and Regional Population (2010 to 2037), shows the population trend for the cities of Berkeley and Oakland as well as for Alameda and Contra Costa counties.

TABLE 5.12-1 CITY AND REGIONAL POPULATION (2010 TO 2037)

Jurisdiction	2010	2018 ^a	2020	2030	2037 ^a	2018–2037 Difference	2018–2037 Percentage Change
Berkeley							
Total Population	112,660	124,322	127,520	135,680	138,982	14,660	11.8%
Household Population	100,040	110,507	113,395	119,875	121,876	11,369	10.3%
Group Quarters Population	12,620	13,815	14,125	15,805	17,106	3,291	23.8%
Number of Households	46,030	50,886	52,290	55,095	55,163	4,277	8.4%
Average Household Size	2.17	2.17	2.17	2.18	2.21	0.04	1.7%
Oakland							
Total Population	392,105	465,252	480,270	554,325	613,476	148,224	31.9%
Household Population	383,780	456,132	470,950	543,910	602,218	146,086	32.0%
Group Quarters Population	8,325	9,123	9,325	10,410	11,258	2,135	23.4%
Number of Households	153,790	181,449	186,145	211,790	230,488	49,039	27.0%
Average Household Size	2.50	2.51	2.53	2.57	2.61	0.10	3.9%
Alameda County							
Total Population	1,515,230	1,677,188	1,711,460	1,868,635	2,013,326	336,138	20.0%
Household Population	1,477,230	1,635,521	1,668,875	1,821,170	1,962,016	326,495	20.0%
Group Quarters Population	38,000	41,667	42,585	47,465	51,312	9,645	23.1%
Number of Households	545,140	603,169	614,965	668,285	711,506	108,337	18.0%
Average Household Size	2.71	2.71	2.71	2.73	2.76	0.05	1.7%
Contra Costa County							
Total Population	1,051,830	1,114,464	1,128,660	1,257,790	1,352,516	238,052	21.4%
Household Population	1,042,275	1,104,029	1,117,995	1,245,855	1,339,615	235,586	21.3%
Group Quarters Population	9,555	10,435	10,665	11,935	12,901	2,466	23.6%
Number of Households	375,365	394,471	399,615	440,765	466,795	72,324	18.3%
Average Household Size	2.78	2.80	2.80	2.83	2.87	0.07	2.5%

Notes:

a. Data for 2018 are interpolated from 2015 and 2020 data. Data for 2037 are interpolated from 2035 and 2040 data.

Source: Association of Bay Area Governments, 2019, *Projections 2040 by Jurisdiction*, https://data.bayareametro.gov/api/views/grqz-amra/files/bf2d7a33-b68e-473d-800f-956d08207b77?download=true&filename=formatated_tables_juris.xlsx, accessed October 21, 2020.

As shown in Table 5.12-1, the population of Berkeley is expected to increase from 124,332 to 138,982 from 2018 to 2037, which is an increase of 14,660 persons or approximately 12 percent. During the same period, the population of Oakland is expected to increase from 465,252 to 613,476, which is an increase of 148,224 persons or approximately 32 percent. The populations of Alameda County and Contra Costa County are

expected to grow by 20 percent and 21 percent, respectively, within the 2036-37 EIR horizon.¹⁵ In all four jurisdictions, the number of households is also expected to grow at a slightly lower rate than total population growth, which reflects the corresponding increase in household size that is expected in these jurisdictions.

UC Berkeley Population

The proposed LRDP Update's population projections are for planning purposes to establish the LRDP's physical development program but do not mandate or commit UC Berkeley to any specific level of student enrollment or overall growth. The development program does, however, establish a maximum amount of net new growth in the UC Berkeley's space inventory during this timeframe, which UC Berkeley may not substantially exceed without amending the LRDP and conducting additional environmental review, as necessary. In general, undergraduate enrollment growth is driven by a directive to absorb a reasonable proportion of the increasing enrollment in the UC system as a whole, as mandated by the State of California, while the overall UC Berkeley population growth (which includes graduate students, faculty, and staff in addition to students) supports UC Berkeley's educational mission and the management and maintenance of UC Berkeley resources and infrastructure. Enrollment growth is also affected by factors such as campus capacity, availability of and interest in specific academic programs, and the individual decisions of potential students.

The increase in overall UC system student enrollment is primarily the result of statewide population growth and the corresponding increase in high school graduation rates and college-aged Californians. The number of additional students admitted by each university is determined by the number of applications received, campus capacity, and other factors. Though student enrollment has increased over the past several years, UC Berkeley has advocated for low growth, and the existing LRDP's population projections anticipated lower rates of average annual growth than have actually occurred.

The current and projected head counts for UC Berkeley include all individuals enrolled or employed at UC Berkeley. This gives the most conservative base for environmental analysis because it overestimates the actual number of individuals on campus at any one time. On any given day, some of UC Berkeley's students, faculty, and staff are absent due to vacation, sick leave, part-time schedules, or sabbaticals. Others, such as students studying abroad, are at remote sites.

Table 5.12-2, UC Berkeley Student and Employee Population (2018 to 2037), presents the baseline (2018-19) and projected future (2036-37) student and employee populations. As described in Chapter 3, Project Description, the future student population is based on enrollment projections. As shown in Table 5.12-2, the total student population is projected to increase from 39,708 to approximately 48,200 from 2018 to 2037, an increase of 8,492 students or 21.4 percent. During the same period, the total employee population is projected to increase from 15,421 to approximately 19,000, which is an increase of 3,579 employees or 23.2 percent.

¹⁵ Alameda County: $(2,013,326 - 1,677,188) / 1,677,188 = 0.20$; Contra Costa County: $(1,352,516 - 1,114,464) / 1,114,464 = 0.21$

TABLE 5.12-2 UC BERKELEY STUDENT AND EMPLOYEE POPULATION (2018 TO 2037)

Category	Existing 2018–19	Projected 2036–37	2018–19 to 2036–37 Difference	2018-19 to 2036-37 Percentage Change
Students				
Undergraduate	29,932	35,000	5,068	16.9%
Graduate	9,776	13,200	3,424	35.0%
Total Student Population	39,708	48,200	8,492	21.4%
Employees				
Faculty	3,276	4,200	924	28.2%
Staff	12,145	14,800	2,655	21.9%
Total Employee Population	15,421	19,000	3,579	23.2%
Total Population	55,129	67,200	12,071	21.9%

Source UC Berkeley, 2019.

Place-of-Residence Patterns for UC Berkeley Employees and Students

Based on a 2019 human resources survey of UC Berkeley employees, 29 percent of faculty/staff surveyed live in Berkeley, 15 percent live in Oakland, 4 percent live in Albany, and an additional 8 percent live in other Alameda County cities. According to the survey, 22 percent live in Contra Costa County, with approximately 4 percent living in El Cerrito and 4 percent living in Richmond. Another 7 percent live in San Francisco, and the remaining employees are scattered throughout other jurisdictions. Please see Appendix K, Place of Residence Data, of this Draft EIR, for further details.

Student place-of-residence data are not recorded in the same manner as employee data, and it is more difficult to determine the place of residence for students because UC Berkeley does not collect home address data. This analysis uses two sources of data—the 2019 human resources survey, discussed above, and data available from Streetlight Data—to approximate student place of residence and uses the average percentage of student residents in any given jurisdiction based on the two datasets (see Appendix K, Place of Residence Data, for further detail). Available data indicate that students generally live closer to the UC Berkeley campus than employees. About 59 to 83 percent of students live in Berkeley (an average of 71 percent), 5 to 6 percent live in Oakland (an average of 6 percent), 3 to 4 percent live in Albany (an average of 4 percent), and an additional 2 to 4 percent live in other Alameda County cities (an average of 3 percent). Another 4 percent live in Contra Costa County according to both datasets, and 1 to 2 percent live in San Francisco (an average of 2 percent). These are considerably smaller percentages compared to employee place of residence patterns. The remaining students are scattered throughout other jurisdictions. The percentage of students living in Berkeley (59 to 83 percent) is a broad range, and the average of 71 percent used in this analysis is higher than the 61 percent figure reported in the 2020 LRDP Draft EIR and the 61.5

percent figure reported in the 1990–2005 LRDP EIR.¹⁶ Place-of-residence data are summarized in Table 5.12-3, Place of Residence.

TABLE 5.12-3 PLACE OF RESIDENCE

Jurisdiction	Students	Faculty/Staff
Berkeley	71%	29%
Oakland	6%	15%
Albany	4%	4%
Elsewhere in Alameda County	3%	8%
El Cerrito	2%	4%
Richmond	1%	4%
Elsewhere in Contra Costa County	2%	14%
San Francisco	2%	7%
Other Jurisdictions	9%	15%
Total	100%	100%

Notes: The percentages shown above do not add up to 100 percent because this table does not include jurisdictions containing small amounts of student and faculty/staff residents.

Source: UC Berkeley and PlaceWorks, 2020.

Housing

Local and Regional Housing

Table 5.12-4, City and Regional Housing (2010 to 2020), shows selected housing characteristics for Berkeley, Oakland, and Alameda and Contra Costa counties. As shown in Table 5.12-4, from 2010 to 2020, the vacancy rate in Berkeley increased from 6.9 percent to 7.4 percent, and the vacancy rates in the other jurisdictions decreased over the same time period. Together, Berkeley and Oakland contain approximately 37 percent of Alameda County's housing stock.

The San Francisco Bay Area is experiencing a housing crisis that has been occurring for several decades. Since the mid-1970s, housing construction in the region has not kept pace with employment growth. This dynamic, coupled with a widening gap in income between high-income and low-income households, has resulted in a housing market in which it is difficult for low-income and middle-income households to compete for market-rate housing.¹⁷

¹⁶ University of Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center For East Asian Studies EIR, 2005, State Clearinghouse Number 2003082131, page 4.10-7.

¹⁷ Association of Bay Area Governments, The Bay Area Today, <http://2040.planbayarea.org/the-bay-area-today>, accessed on March 2, 2021.

TABLE 5.12-4 CITY AND REGIONAL HOUSING (2010 TO 2020)

Jurisdiction	2010	2018	2020
Berkeley			
Total Housing Units	49,454	50,953	51,523
Occupied Housing Units	46,029	47,209	47,718
Vacancy Rate	6.9%	7.3%	7.4%
Oakland			
Total Housing Units	169,710	172,170	175,457
Occupied Housing Units	153,791	161,155	164,296
Vacancy Rate	9.4%	6.4%	6.4%
Alameda County			
Total Housing Units	581,372	601,967	611,752
Occupied Housing Units	544,046	569,598	579,058
Vacancy Rate	6.4%	5.4%	5.3%
Contra Costa County			
Total Housing Units	400,263	413,818	418,409
Occupied Housing Units	375,364	391,806	396,099
Vacancy Rate	6.2%	5.3%	5.3%

Source: State of California, Department of Finance, 2020, *E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011-2020*, http://www.dof.ca.gov/forecasting/demographics/Estimates/e-5/documents/E-5_2020_Internet_Version.xlsx, accessed November 10, 2020.

UC Berkeley Housing

As shown in Table 5.12-5, Existing UC Berkeley Housing in the EIR Study Area, UC Berkeley provides 9,004 beds in the EIR Study Area, all of which are typically occupied. Over 75 percent of these beds are on properties within the blocks in the City Environs Properties surrounding the Campus Park. The remaining beds are on the Clark Kerr Campus and in the Hill Campus West. There is no existing UC Berkeley housing within the Campus Park or the Hill Campus East. This bed count does not include UC Berkeley housing outside of the EIR Study Area (including University Village) or affiliate or master leased properties. This bed count also does not include the existing 16 beds on the Housing Project #1 site (discussed under the heading, Housing Project #1, below).

TABLE 5.12-5 EXISTING UC BERKELEY HOUSING IN THE EIR STUDY AREA

Zone	Property Name	Beds ^a
Campus Park	N/A	–
	<i>Campus Park Subtotal</i>	0
Hill Campus West	Stern Hall/Foothill Residence Hall	694
	International House	620
	Bowles Hall	188
	<i>Hill Campus West Subtotal</i>	1,502
Hill Campus East	N/A	–
	<i>Hill Campus East Subtotal</i>	0
Clark Kerr Campus	Clark Kerr Northwest	240
	Clark Kerr Southwest	299
	Clark Kerr Central	435
	Clark Kerr Hillside	26
	<i>Clark Kerr Subtotal</i>	1,000
City Environs Properties	Foothill-La Loma Residence Hall	382
	Unit 1	1,568
	Unit 2	1,354
	Unit 3	1,144
	Wada Apartments	172
	Martinez Commons	400
	Beverly Cleary	236
	Channing-Bowditch	216
	Blackwell	780
	Manville	132
	Jackson	118
	<i>City Environs Properties Subtotal</i>	6,502
Total Existing Beds		9,004

Notes: N/A = not applicable

This table only includes UC Berkeley housing in the EIR Study Area and does not include the existing 16 beds on the Housing Project #1 site, housing outside of the EIR Study Area (including University Village), some affiliate housing, or housing that UC Berkeley provides through a master lease agreement.

a. Bed count is for UC Berkeley housing only and does not include the existing 16 beds at the Housing Project #1 site.

Source: UC Berkeley, 2020.

Employment

Local and Regional Employment

Table 5.12-6, City and Regional Employment (2010 to 2037), shows employment growth projections for Berkeley and Oakland as well as for Alameda and Contra Costa counties. As shown in Table 5.12-6, the total number of jobs in Berkeley is expected to increase from 115,727 to 121,457 from 2018 to 2037, which represents a 5 percent increase. During the same period, the total number of jobs in Oakland is expected to

increase from 246,006 to 269,448, which is a 9.5 percent increase. The number of jobs in Alameda County and Contra Costa County is expected to grow by approximately 11 percent and 19 percent, respectively.¹⁸

TABLE 5.12-6 CITY AND REGIONAL EMPLOYMENT (2010 TO 2037)

Jurisdiction	2010	2018 ^a	2020	2030	2037 ^a	2018–2037 Difference	2018–2037 Percentage Change
Berkeley							
Total Jobs	90,350	115,727	116,435	118,885	121,457	5,730	5.0%
Employed Residents	58,620	72,916	74,620	76,705	76,144	3,228	4.4%
Jobs-to-Employed Residents Ratio	1.54	1.59	1.56	1.55	1.60	0.01	0.5%
Oakland							
Total Jobs	179,065	246,006	247,310	259,175	269,448	23,442	9.5%
Employed Residents	179,210	237,776	243,160	267,165	284,995	47,219	19.9%
Jobs-to-Employed Residents Ratio	1.00	1.03	1.02	0.97	0.95	(0.09)	-8.6%
Alameda County							
Total Jobs	705,540	848,903	858,685	901,080	941,411	92,508	10.9%
Employed Residents	723,810	898,625	911,725	959,745	1,000,272	101,647	11.3%
Jobs-to-Employed Residents Ratio	0.97	0.94	0.94	0.94	0.94	0.00	-0.4%
Contra Costa County							
Total Jobs	360,230	411,026	414,290	458,255	489,532	78,506	19.1%
Employed Residents	497,445	585,516	589,810	633,830	659,431	73,915	12.6%
Jobs-to-Employed Residents Ratio	0.72	0.70	0.70	0.72	0.74	0.04	5.8%

Notes: Numbers may not sum due to rounding.

a. Data for 2018 is interpolated from 2015 and 2020 data. Data for 2037 is interpolated from 2035 and 2040 data.

Source: Association of Bay Area Governments, 2019, *Projections 2040 by Jurisdiction*, https://data.bayareametro.gov/api/views/grqz-amra/files/bf2d7a33-b68e-473d-800f-956do8207b77?download=true&filename=formatd_tables_juris.xlsx, accessed October 21, 2020.

UC Berkeley Employment

Employment at UC Berkeley is discussed previously under the “UC Berkeley Population” heading.

Housing Project #1

The Housing Project #1 site currently contains several buildings, including an apartment building that accommodates 16 beds in eight apartments. The remaining buildings are nonresidential and include two UC Berkeley buildings (1925 Walnut Street and 1952 Oxford Street) and three former retail spaces.

¹⁸ Alameda County: $(2,013,326 - 1,677,188) / 1,677,188 = 0.20$; Contra Costa County: $(1,352,516 - 1,114,464) / 1,114,464 = 0.21$

Housing Project #2

The Housing Project #2 site does not contain any residential buildings. At the time of the preparation of this EIR, the site has long been primarily occupied by people without housing (homeless) in multiple encampments that range in size from single sleeping bags and small tents to large tents and makeshift tarp/tent and pallet dwellings.

5.12.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant population and housing impact if it would:

1. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
2. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.
3. In combination with past, present, and reasonably foreseeable projects, result in significant cumulative impacts.

State CEQA Guidelines Section 15064(e) notes that an economic or social change by itself would not be considered a significant effect on the environment. Population growth is considered in the context of local and regional plans and population, housing, and employment projections. Generally, a project that induces population growth is not viewed as having a significant impact on the environment unless this growth is unplanned and results in significant physical impacts on the environment. Thus, the growth and changes in employment and population and the potential demand for housing that would occur with implementation of the proposed LRDP Update and Housing Projects #1 and #2 would not be adverse physical impacts in and of themselves.

However, the physical changes needed to accommodate project-related growth may have physical impacts on the environment. Project-related growth and the increase in population would result primarily in increased demand on transportation infrastructure, utilities, public services, and recreational facilities as well as increases in ambient noise levels, emissions of criteria air pollutants and toxic air contaminants, and greenhouse gas emissions. These physical impacts are evaluated throughout this Draft EIR, specifically in Chapter 5.2, Air Quality; Chapter 5.5, Energy; Chapter 5.13, Public Services; Chapter 5.14, Parks and Recreation; Chapter 5.15, Transportation; and Chapter 5.17, Utilities and Service Systems.

5.12.3 IMPACT DISCUSSION

POP-1	The proposed project would induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
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LRDP Update

Direct Population Growth

A comparison of UC Berkeley’s baseline population conditions and projected 2036–37 population is shown in Table 5.12-2, UC Berkeley Student and Employee Population (2018 to 2037). As described in Chapter 3 and shown in Table 5.12-2, UC Berkeley is evaluating its ability to accommodate an additional 5,068 undergraduate and 3,424 graduate students by 2036–37, the equivalent of 8,492 more full-time students over base year 2018–19, resulting in a student population of up to about 48,200 students and a total employment of up to about 19,000 employees.

As shown in Table 5.12-2, the total projected direct population increase (i.e., net new students and faculty/staff) being planned for under the proposed LRDP Update is 12,071 people by the 2036–37 school year. This environmental analysis conservatively assumes that all new students and faculty/staff represent an actual increase in the local and regional population, although at least some future students and employees already reside within the city of Berkeley or the San Francisco Bay region.

Extension students, visitors, and vendors, including construction workers, are assumed to already reside in the region or, in the case of some UC Berkeley Extension students, to be visiting the region for very limited periods. Therefore, these groups also would not significantly affect population growth.

The addition of up to 12,071 people to the Bay Area is in keeping with regional population projections. The population of Alameda County is projected to grow by 336,138 from the 2018–19 to the 2036–37 school year. Growth directly resulting from the proposed LRDP Update would amount to 4 percent of this increment.

The direct population increase from the proposed LRDP Update was also evaluated by examining local housing production. Table 5.12-7, Projected Housing Changes in the EIR Study Area, provides an approximate breakdown of projected housing changes in the EIR Study Area, based on the future residential building projects that are described in Chapter 3, Project Description, of this Draft EIR. Direct population growth would be most pronounced in Berkeley due to the new housing projected to be developed under the proposed LRDP Update in the Clark Kerr Campus and the City Environs Properties. As shown in Table 5.12-7, up to 11,073 net new student beds (9,008 undergraduate beds + 2,065 graduate beds) may be constructed under the proposed LRDP Update in the Clark Kerr Campus and the City Environs Properties. This number of student beds would accommodate the projected increase of 8,492 new students as well as a portion of the existing student population.

TABLE 5.12-7 PROJECTED HOUSING CHANGES IN THE EIR STUDY AREA

Housing Changes	Zone		Total
	Clark Kerr Campus	City Environs Properties	
Demolition			
Undergraduate Student Housing	254	1,762	2,016
Graduate Student Housing	0	0	0
Faculty/Staff Housing	3	0	3
UC Berkeley Housing Subtotal	257	1,762	2,019
Non-University Housing	0	16	16
Non-University Housing Subtotal	0	16	16
Total Demolition	257	1,778	2,035
New Construction			
Undergraduate Student Housing	2,621	8,403	11,024
Graduate Student Housing	0	2,065	2,065
Faculty/Staff Housing	0	552	552
UC Berkeley Housing Subtotal	2,621	11,020	13,641
Non-University Housing	0	125	125
Non-University Housing Subtotal	0	125	125
Total New Construction	2,621	11,145	13,766
Net Change			
Undergraduate Student Housing	2,367	6,641	9,008
Graduate Student Housing	0	2,065	2,065
Faculty Housing	(3)	552	549
UC Berkeley Housing Subtotal	2,364	9,258	11,622
Non-University Housing	-0	109	109
Non-University Housing Subtotal	0-	109	109
Total Net Change	2,364	9,367	11,731

Source: UC Berkeley, 2020.

Table 5.12-8, Projected Population Increase Due to Housing Production, provides a direct population estimate as a result of housing production. Of the 11,073 net new student beds that may be constructed under the proposed LRDP Update, 2,065 beds are estimated to be for graduate students. Using a conservative assumption that up to 50 percent of graduate student housing may be made available to graduate students with families, and using the current household size of existing graduate family units (2.47 residents per unit),¹⁹ the 2,065 new faculty/staff housing beds would represent approximately 3,583 new Berkeley residents (1,033 graduate students in nonfamily housing + 2,550 graduate students and family members in graduate family housing).²⁰

¹⁹ Physical & Environmental Planning, UC Berkeley. Email correspondence with PlaceWorks, January 21, 2021.

²⁰ This analysis is overly conservative as it (1) assumes that half of graduate students have families and (2) assumes that all of the net new UC Berkeley population represents people who are new to the region.

TABLE 5.12-8 PROJECTED POPULATION INCREASE DUE TO HOUSING PRODUCTION

Type of Housing	Net New Beds	Household Size ^a	Residents
Undergraduate Student Housing	9,008	N/A	9,008
Graduate Student Housing ^b	2,065		3,583
<i>Graduate Student Nonfamily Housing</i>	1,033	N/A	1,033
<i>Graduate Student Family Housing</i>	1,033	2.47	2,550
Faculty/Staff Housing	549	2.19	1,202
Non-University Housing	109	N/A	109
Total	11,731		13,902

Notes: N/A = not applicable

a. This analysis assumes that graduate family housing and faculty/staff household sizes are consistent with existing household sizes for these types of units (2.47 and 2.19, respectively).

b. This analysis assumes that half of the 2,065 net new graduate student beds (see Table 5.12-7, Projected Housing Changes in the EIR Study Area) are provided in family housing units. Numbers do not sum due to rounding.

Source: UC Berkeley, PlaceWorks, 2020.

In addition to the student housing, it is projected that up to 549 net new faculty/staff beds (552 new construction beds – 3 demolition beds) would be developed under the proposed LRDP Update. These beds would all be in the City Environs Properties. The number of beds would accommodate approximately 15 percent of the projected increase of 3,579 employees. Using the current household size of existing faculty units (2.19 residents per unit),²¹ the 549 new faculty/staff housing beds would represent approximately 1,202 new Berkeley residents.²²

In addition, Housing Project #2 includes 125 affordable and supportive housing beds. Because the proposed LRDP Update would remove the existing 16 non-UC Berkeley beds at the Housing Project #1 site, the proposed LRDP Update would accommodate a net increase in 109 non-UC Berkeley residents.

As shown in Table 5.12-8, Projected Population Increase Due to Housing Production, the 11,731 net new beds that could be provided under the proposed LRDP Update would result in up to 13,902 net new City of Berkeley residents by 2037 (9,008 undergraduate students + 3,583 graduate housing residents + 1,202 faculty housing residents + 109 non-UC Berkeley residents), conservatively assuming that all new occupants of future housing projects do not currently live in Berkeley.

New UC Berkeley housing built under the proposed LRDP Update would support the policies of the Berkeley General Plan, which encourage UC Berkeley to build new housing within Berkeley for both students and employees. While population density in some areas of the city of Berkeley would increase through the proposed LRDP Update, UC Berkeley intends to ensure this increase would occur in the areas of the city most suitable for greater density, including sites in Downtown and Southside Berkeley and along

²¹ Physical & Environmental Planning, UC Berkeley. Email correspondence with PlaceWorks, January 21, 2021.

²² This analysis is overly conservative as it (1) assumes that all faculty/staff have families, (2) assumes that half of graduate students would have families, and (3) assumes that all of the net new UC Berkeley population represents people who are new to the region.

major transit arterials. Nevertheless, the projected increase of up to 13,902 residents in the city of Berkeley resulting from the proposed LRDP Update would represent 10 percent of the projected 2037 city of Berkeley population of 138,982, and represents a substantial portion of the projected 2018–19 to 2036–37 city of Berkeley population increase of 14,660 in ABAG’s Projections 2040.

Indirect Population Growth

In addition to the direct population growth associated with construction of UC Berkeley housing in the EIR Study Area, the proposed LRDP Update could generate indirect population growth associated with the students and faculty/staff anticipated by 2036–37 who would not be accommodated in UC Berkeley–provided housing.

Table 5.12-9, UC Berkeley Population Compared to UC Berkeley Housing in the EIR Study Area, provides a breakdown of projected population change compared to projected UC Berkeley housing development in the EIR Study Area and identifies the number of students and faculty/staff that would not be accommodated by UC Berkeley housing (referred to as “unaccommodated” in this analysis). The bed count in Table 5.12-9 is conservatively low as it only includes UC Berkeley–provided housing in the EIR Study Area. It does not include UC Berkeley housing outside of the EIR Study Area (including University Village) or affiliate or master-leased properties.

As described previously, the housing projected to be built under the proposed LRDP Update would accommodate the projected increase of 8,492 new students by the 2036–37 school year as well as a portion of the existing student population. UC Berkeley does not currently provide housing for all its students, providing 8,972 beds for a 2018–19 student population of 39,708. UC Berkeley will also not accommodate all students in 2036–37 in UC Berkeley housing when taking into account both existing and new students. As shown in Table 5.12-9, the estimated unaccommodated undergraduate student population would decrease from 21,210 in 2018–19 to 17,270 in 2036–37 – a decrease of 3,940 students. Based on the place of residence data presented in Section 5.12.1, Environmental Setting, and Table 5.12-3, Place of Residence, and assuming that existing place-of-residence patterns apply to future students, students who do not reside in UC Berkeley housing would be expected to primarily reside in Berkeley and Oakland and, to a lesser extent, Albany, San Francisco, and other Alameda County and Contra Costa County jurisdictions. Specifically, based on the data presented in Table 5.12-3, this analysis assumes that the following percentages of undergraduate students would live in the following jurisdictions:

- | | |
|--|---|
| ▪ Berkeley: 71 percent | ▪ Richmond: 1 percent |
| ▪ Oakland: 6 percent | ▪ Elsewhere in Contra Costa County: 2 percent |
| ▪ Albany: 4 percent | ▪ San Francisco: 2 percent |
| ▪ Elsewhere in Alameda County: 3 percent | ▪ Other jurisdictions: 9 percent |
| ▪ El Cerrito: 2 percent | |

Table 5.12-9, UC Berkeley Population Compared to UC Berkeley Housing in the EIR Study Area, compares the 2018–19 and 2036–37 unaccommodated undergraduate student population in these jurisdictions. As described previously, because UC Berkeley plans to increase its undergraduate housing supply by a level that will result in an overall decrease in the number of unaccommodated students by 2036–37, the numbers shown in Table 5.12-11, Change in Unaccommodated UC Berkeley Population Residing in Nearby

Jurisdictions, reflect decreases in the current estimated number of undergraduate students who live in non-UC Berkeley housing in these jurisdictions. Therefore, future development under the proposed LRDP Update would result in a decrease in indirect population growth associated with undergraduate students and would not create a significant impact.

TABLE 5.12-9 UC BERKELEY POPULATION COMPARED TO UC BERKELEY HOUSING IN THE EIR STUDY AREA

	Undergraduate Student	Graduate Student	Faculty/Staff	Total
2018-19				
UC Berkeley Population	29,932	9,776	15,421	55,129
UC Berkeley Beds ^a	8,722	250	32	9,004
Unaccommodated UC Berkeley Population	21,210	9,526	15,389	46,125
2036-37				
UC Berkeley Population	35,000	13,200	19,000	67,200
UC Berkeley Beds ^a	17,730	2,315	581	20,626
Unaccommodated UC Berkeley Population	17,270	10,885	18,419	46,574
Change				
UC Berkeley Population	5,068	3,424	3,579	12,071
UC Berkeley Beds ^a	9,008	2,065	549	11,622
Unaccommodated UC Berkeley Population	(3,940)	1,359	3,030	449

Notes:

a. This table only includes UC Berkeley housing within the EIR Study Area; it does not include the existing 16 beds on the Housing Project #1 site, housing outside of the EIR Study Area (including University Village), some affiliate housing, or housing that UC Berkeley provides through a master lease agreement. This table also does not include the affordable and supportive housing units proposed for Housing Project #2.

Source: UC Berkeley, 2020.

As shown in Table 5.12-9, the number of unaccommodated graduate students would increase from 9,526 to 10,885 students between the 2018-19 and 2036-37 school years, an increase of 1,359 unaccommodated graduate students. As shown in Table 5.12-10, Unaccommodated UC Berkeley Population and Associated Household Population, to account for the possibility that a notable number of graduate students may have families, this analysis conservatively multiplies the number of unaccommodated graduate students by the projected 2037 average household size of 2.76 persons per household for Alameda County (see Table 5.12-1, City and Regional Population [2010 to 2037]).²³ Using this assumption, this analysis calculates that the increase in graduate students could generate a population growth of 3,751 persons (1,359 x 2.76). Table 5.12-11 compares the 2018-19 and 2036-37 unaccommodated graduate student population in nearby jurisdictions based on the place of residence information presented in Table 5.12-3 and shows the amounts by which the number of graduate students and their family members seeking private or non-UC Berkeley off-campus housing could increase in these nearby jurisdictions. The analysis in Table 5.12-11 applies the same percentages listed for undergraduate students above in this section.

²³ This analysis is overly conservative because it (1) assumes that all graduate students have families, (2) applies the projected 2037 household size for Alameda County, which is larger than the household sizes of Berkeley and Oakland, and (3) assumes that future UC Berkeley population represents people who are new to the region.

TABLE 5.12-10 UNACCOMMODATED UC BERKELEY POPULATION AND ASSOCIATED HOUSEHOLD POPULATION

Category	2018-19			2036-37			2018-19 to 2036-37 Change
	UC Berkeley Population	Household Population ^a	Total	UC Berkeley Population	Household Population ^a	Total	
Undergraduate Students	21,210	N/A	21,210	17,270	N/A	17,270	(3,940)
Graduate Students	9,526	16,766	26,292	10,885	19,158	30,043	3,751
Faculty/Staff	15,389	27,085	42,474	18,419	32,417	50,836	8,363
Total	46,125	43,850	89,975	46,574	51,575	98,149	8,173

Notes: N/A = not applicable; numbers may not sum due to rounding.

a. This analysis conservatively assumes that all graduate students and faculty/staff have families, and that household sizes are consistent with the projected 2037 average household size of 2.76 persons per household for Alameda County (see Table 5.12-1).

Source: PlaceWorks, 2020.

The number of unaccommodated faculty and staff is projected to increase from 15,389 to 18,449 from 2018-19 to 2036-37, an increase of 3,030 unaccommodated faculty/staff. As shown in Table 5.12-10, and using the same 2.76 persons per household metric as for graduate students, this analysis calculates that the increase in faculty and staff could generate a population increase of 8,363 ($3,030 \times 2.76$). Table 5.12-11 compares the 2018-19 and 2036-37 unaccommodated faculty/staff population in nearby jurisdictions based on the place-of-residence information presented in Section 5.12.1, Environmental Setting, and Table 5.12-3 and shows the amounts by which the number of faculty/staff and their family members seeking off-campus private or non-UC Berkeley housing could increase in these nearby jurisdictions. Specifically, based on the data presented in Table 5.12-3, this analysis assumes that the following percentages of faculty/staff would live in the following jurisdictions:

- Berkeley: 29 percent
- Oakland: 15 percent
- Albany: 4 percent
- Elsewhere in Alameda County: 8 percent
- El Cerrito: 4 percent
- Richmond: 4 percent
- Elsewhere in Contra Costa County: 14 percent
- San Francisco: 7 percent
- Other jurisdictions: 15 percent

TABLE 5.12-11 CHANGE IN UNACCOMMODATED UC BERKELEY POPULATION RESIDING IN NEARBY JURISDICTIONS

Jurisdiction	2018–19				2036–37				2018–19 to 2036–37 Change
	Under-graduate Students	Graduate Students and Their Family Members	Faculty/Staff and Their Family Members	Total	Under-graduate Students	Graduate Students and Their Family Members	Faculty/Staff and Their Family Members	Total	
Berkeley (71% students / 29% faculty/staff)	15,059	18,667	12,317	46,044	12,261	21,330	14,743	48,334	2,291
Oakland (6% students / 15% faculty/staff)	1,273	1,578	6,371	9,221	1,036	1,803	7,625	10,464	1,243
Albany (4% students / 4% faculty/staff)	848	1,052	1,699	3,599	691	1,202	2,033	3,926	327
Elsewhere in Alameda County (3% students / 8% faculty/staff)	636	789	3,398	4,823	518	901	4,067	5,486	663
El Cerrito (2% students / 4% faculty/staff)	424	526	1,699	2,649	345	601	2,033	2,980	331
Richmond (1% students / 4% faculty/staff)	212	263	1,699	2,174	173	300	2,033	2,507	333
Elsewhere in Contra Costa County (2% students / 14% faculty/staff)	424	526	5,946	6,896	345	601	7,117	8,063	1,167
San Francisco (2% students / 7% faculty/staff)	424	526	2,973	3,923	345	601	3,559	4,505	582
Other Jurisdictions (9% students / 15% faculty/staff)	1,909	2,366	6,371	10,646	1,554	2,704	7,625	11,884	1,237
Total Unaccommodated Population	21,210	26,292	42,474	89,975	17,270	30,043	50,836	98,149	8,173

Notes:

This analysis is overly conservative as it 1) assumes that all graduate students have families, 2) applies the projected 2037 household size of 2.67 for Alameda County, which is larger than the household sizes for Berkeley and Oakland (see Table 5.12-1), and 3) assumes that future UC Berkeley population represents people who are new to the region.

Source: PlaceWorks, 2020.

The anticipated indirect population growth in the cities of Oakland, Albany, El Cerrito, Richmond, and San Francisco would be negligible when compared to the overall population growth anticipated in those jurisdictions by the 2036–37 school year.²⁴ In addition, this analysis does not account for UC Berkeley housing outside of the EIR Study Area (including University Village) and affiliate housing, which helps to absorb some of the UC Berkeley population and reduce the number of unaccommodated students and faculty/staff who seek housing in nearby jurisdictions. Further, all indirect growth under the proposed LRDP Update would occur in heavily urbanized areas already served by local services and infrastructure; there would be no expansion of roads or utilities that could induce new urban growth in areas not already planned for growth. Thus, there would be no indirect growth impacts from the increased population that could reside in these jurisdictions. Other indirect effects of population growth, such as increased vehicular usage, utilities, transit demand, and demand for public services, are discussed elsewhere in Chapter 5 (see Chapters 5.15, Transportation, and 5.13, Public Services, of this Draft EIR).

In the city of Berkeley, overall population growth under the LRDP Update would be a combination of the direct growth resulting from construction of new housing (which could result in a total of up to 13,902 new city of Berkeley residents by 2037, as shown in Table 5.12-8, Projected Population Increase due to Housing Production) and indirect growth from unaccommodated students and faculty/staff seeking housing in the city (estimated to be 2,291 people, as shown in Table 5.12-11, Change in Unaccommodated University Population Residing in Nearby Jurisdictions).

Therefore, based on the analysis herein, future development under the proposed LRDP Update could add up to 16,193 people to the city of Berkeley population (13,902 direct population growth + 2,291 indirect population growth). This combined increase in city of Berkeley residents would represent 12 percent of the projected 2037 city of Berkeley population of 138,982 and would exceed the projected 2018 to 2037 population increase of 14,660 in ABAG's Projections 2040. This population growth within the city of Berkeley could indirectly increase demand for population-serving uses, such as retail and other establishments, and could also create temporary construction jobs. However, as this indirect employment growth would be minor compared to the existing and projected employment population in the city of Berkeley, it is expected that these employees would already live in the region and that the number of employees would not be an amount substantial enough to generate population growth.

It is reasonable to assume that some of UC Berkeley's student and employee population already reside in the city of Berkeley and nearby jurisdictions, and therefore would not represent a net increase in the local population. However, as previously stated, this analysis conservatively assumes that all net new population growth represents people who are new residents.

²⁴ Table 5.12-11 shows a population growth of 1,243 in Oakland, which is less than 1 percent of Oakland's population increase of 148,224 by 2037; a population growth of 327 in Albany, which is less than 2 percent of Albany's population increase of 19,215; a population growth of 331 in El Cerrito, which is approximately 11 percent of El Cerrito's population increase of 2,931; a population increase of 333 in Richmond, which is 1 percent of Richmond's population increase of 34,676; and a population growth of 582 in San Francisco, which is less than 1 percent of San Francisco's population increase of 180,307. Population projections for 2037 were interpolated from 2035 and 2040 data from ABAG *Projections 2040*.

As previously described, the majority of this population growth would be accommodated by UC Berkeley in future housing constructed under the proposed LRDP Update. The housing production that would generate direct population growth would occur under the framework of the proposed LRDP Update, and therefore would not occur without any comprehensive planning. In addition, it would serve the purpose of setting the planning framework for a level of enrollment necessary to achieve the UC's educational mission. Future improvements to infrastructure constructed under the proposed LRDP Update would also serve to accommodate the UC Berkeley population and would not have the effect of extending infrastructure into previously undeveloped areas or areas not planned to accommodate additional growth. Nevertheless, because the local direct and increase population growth projected under the LRDP Update would exceed ABAG projections for Berkeley, this is considered a *significant* impact.

Impact POP-1: As a result of both direct population growth (from the construction of new UC Berkeley housing) and indirect population growth (from students and faculty/staff seeking non-UC Berkeley housing in Berkeley), the LRDP Update would accommodate a level of population growth that would exceed the current ABAG Projections for Berkeley.

Mitigation Measure POP-1: UC Berkeley shall, on an annual basis, provide a summary of LRDP enrollment and housing production data, including its LRDP enrollment projections and housing production projections, to the City of Berkeley and the Association of Bay Area Governments, for the purpose of ensuring that local and regional planning projections account for UC Berkeley-related population changes. UC Berkeley's Office of Physical & Environmental Planning shall verify compliance with this measure.

Significance with Mitigation: Less than significant. Through Mitigation Measure POP-1, UC Berkeley would provide regular updates to the City of Berkeley and ABAG for projection purposes, ensuring that local and regional projections are prepared with knowledge of UC Berkeley enrollment and housing projections.

Housing Project #1

This environmental analysis conservatively assumes that all new student residents represent an actual increase in the local population, although at least some future residents of Housing Project #1 either already reside in the city of Berkeley or would live elsewhere in the city if Housing Project #1 were not built. Under this approach, because Housing Project #1 would provide approximately 770 student beds, it would be considered to directly increase the population in Berkeley by approximately 770 people. The proposed project would provide on-site amenities, utilities, and circulation improvements to serve the proposed student housing as well as office and retail space available for lease to the public. These residential and nonresidential uses and improvements would be in Downtown Berkeley immediately adjacent to the Campus Park, in an already developed city center that consistently has a number of ongoing redevelopment and improvement projects, and would not have the effect of inducing unplanned growth or extending growth to an undeveloped area.

Construction of Housing Project #1 could also create temporary construction jobs. It is expected that employees of the future nonresidential uses, as well as construction workers, already live in the region, and

the number of employees working on the site would not be substantial enough to generate population growth. Construction industry jobs generally have no regular place of business, as construction workers commute to job sites throughout a given region, which may change several times a year. Additionally, many construction workers are highly specialized (e.g., crane operators, steel workers, etc.) and move from job site to job site within the region as dictated by the demand for their specific skills. Due to the highly specialized nature of these jobs, workers are generally employed on a job site only as long as their skills are needed to complete a particular phase of the construction process. For these reasons, employment opportunities associated with construction of Housing Project #1 would not likely result in any measurable relocation of construction worker households to the city or region.

The population increase of approximately 770 residents represents less than 1 percent of the projected 2037 Berkeley population of 138,982 and represents approximately 5 percent of the projected 2018 to 2037 population increase of 14,660 in ABAG's Projections 2040. Housing Project #1 is located in a Priority Development Area designed to accommodate a substantial proportion of the city's future residential growth, and the student housing to be constructed under Housing Project #1 would support the policies of the Berkeley General Plan, which encourage UC Berkeley to build new housing in the city for both students and employees.

The population growth under Housing Project #1, on its own, would be accommodated within the City of Berkeley's projections and would further policies in the Berkeley General Plan and the Plan Bay Area. Therefore, the impact would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The affordable and supportive housing at Housing Project #2 is intended to serve city of Berkeley residents who are unhoused and therefore would not be expected to substantially affect the city's population. Nevertheless, as with Housing Project #1, this environmental analysis conservatively assumes that all new residents of Housing Project #2 would represent an actual increase in the local population, although at least some future residents of Housing Project #2 either already reside in the city or would live elsewhere in the city if Housing Project #2 were not built. Under this approach, Housing Project #2 would provide approximately 1,179 student beds, 8 faculty/staff beds, and 125 affordable and supportive housing beds and would therefore be considered to directly increase the population in Berkeley by approximately 1,312 people. The project would provide on-site amenities, utilities, and circulation improvements to serve the proposed student and affordable and supportive housing, as well as a market and open space accessible to the public. These residential and nonresidential uses and improvements would occur in the Southside area of the city of Berkeley, an already developed neighborhood that currently contains a number of other redevelopment and improvement projects, and would not have the effect of inducing unplanned growth or extending growth to an undeveloped area.

Construction of Housing Project #2 could also create temporary construction jobs. It is expected that employees of the future nonresidential uses, as well as construction workers, already live in the region, and the number of employees working on the site would not be substantial enough to generate population

growth. As described above for Housing Project #1, construction workers generally commute to job sites throughout a given region, and many construction workers are highly specialized (e.g., crane operators, steel workers, etc.). Due to the highly specialized nature of these jobs, workers are generally employed on a job site only as long as their skills are needed to complete a particular phase of the construction process. For these reasons, employment opportunities associated with construction of Housing Project #2 would not likely result in any measurable relocation of construction worker households to the city or region.

The population increase of approximately 1,312 residents represents less than 1 percent of the projected 2037 Berkeley population of 138,982 and approximately 9 percent of the projected 2018 to 2037 population increase of 14,660 in ABAG's Projections 2040. The population growth under Housing Project #2, on its own, would be accommodated within the City of Berkeley's projections. Therefore, the impact would be *less than significant*.

Significance without Mitigation: Less than significant.

POP-2	The proposed project could displace substantial numbers of existing people or housing but would not necessitate the construction of replacement housing elsewhere.
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Future development under the proposed LRDP Update would substantially displace existing people or housing if it would result in a decreased housing supply that would necessitate the construction of replacement housing elsewhere. The proposed LRDP Update is expected to result in the demolition of existing student and faculty/staff housing and the existing eight-unit apartment building at 1921 Walnut Street, and the construction of new student and faculty/staff housing, as well as affordable and supportive housing as part of Housing Project #2. In total, the proposed LRDP Update is projected to result in the construction of approximately 11,731 net new beds in a variety of unit types.

When development projects involve the removal of non-UC Berkeley housing units (such as the demolition of the apartment building at 1921 Walnut Street for Housing Project #1), UC Berkeley adheres to requirements of State law as stated in the UC Relocation Assistance Act Policy for Real Estate Acquisitions and Leases (Relocation Policy). In compliance with the requirements in this Relocation Policy, UC Berkeley will provide informational materials to existing building occupants, conduct personal interviews and maintain personal contact with occupants, analyze relocation needs, analyze relocation resources, and provide relocation payments covering moving expenses and additional costs. The Relocation Policy also establishes procedures for additional or alternative assistance to provide last-resort housing if comparable replacement housing is not available or not within the monetary limits set forth by the California Government Code. The last-resort housing procedures enable UC Berkeley to provide rental assistance payments in exceedance of the limits in the Government Code; rehabilitate, expand, or create new housing; or acquire replacement housing to subsequently sell or lease to displaced persons, among other methods.

Though the proposed LRDP Update, at full development, would result in a substantial net increase in housing at UC Berkeley (11,731 beds), it is possible that housing development will be less than the total projected, or that individual future housing projects may involve the displacement of existing people or housing. Housing Project #1 specifically would involve the displacement of existing residents not affiliated

with UC Berkeley, as discussed in further detail below. However, housing development under the proposed LRDP Update would occur on sites owned by UC Berkeley. The buildout evaluated in this EIR can be realized within the potential development sites mapped in Figure 3-3, Potential Areas of New Development and Redevelopment, and listed in Table 3-2, Potential Areas of New Development and Redevelopment, of Chapter 3, Project Description, of this Draft EIR. However, due to the programmatic nature of this analysis, it is possible that potential future development within the scope of the LRDP Update could involve displacement effects. Therefore, this impact is considered *significant*.

Impact POP-2: Future development projects could result in the displacement of existing residents.

Mitigation Measure POP-2: Prior to issuance of any permits for construction of projects that have the potential to displace existing residents or businesses, UC Berkeley shall comply with the UC Relocation Assistance Act Policy for Real Estate Acquisitions and Leases. UC Berkeley's Real Estate Office shall verify compliance with this measure.

Significance with Mitigation: Less than significant. Any displacement of existing residents at future development sites would be required to adhere to Mitigation Measure POP-2 and the UC Relocation Assistance Act Policy. Through adherence to the UC Relocation Assistance Act Policy, UC Berkeley would follow procedures to assist existing residents with finding replacement housing.

Housing Project #1

The Housing Project #1 site currently contains an apartment building at 1921 Walnut Street that accommodates 16 beds in eight apartments. The existing apartment building would be demolished as part of the construction of Housing Project #1, and the site would be developed with student housing, resulting in a loss of eight rent-controlled multifamily housing units in the private housing market.

The creation of 770 beds as part of Housing Project #1 would help to alleviate student housing demands in Berkeley and could increase the supply of housing available to other local residents. The number of households (eight) that would be displaced by the proposed project would not be large enough to necessitate the construction of replacement housing.

In addition, as previously described, the UC system adheres to State law through the implementation of the UC Relocation Assistance Act Policy for Real Estate Acquisitions and Leases. UC Berkeley has already acquired this building, has notified its residents of the redevelopment plans for the project site, and is assisting the building's residents to find and relocate to other housing. With the implementation of this relocation assistance, the impact is considered *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The Housing Project #2 site does not contain any existing residential buildings or formal housing facilities. Although the site is primarily occupied by people without housing (homeless) in multiple encampments,

camping or staying overnight in the park is not permitted on UC Berkeley property. The creation of approximately 1,179 student beds as part of Housing Project #2 would help to alleviate student housing demands in Berkeley and could increase the supply of housing available to other local residents. In addition, the project includes the development of affordable and supportive housing that would provide 125 beds in a mix of unit types. The affordable and supportive housing component of Housing Project #2 would provide permanent housing for lower-income or formerly homeless individuals, with on-site services. Individuals who currently reside on the Housing Project #2 site are part of the population that the affordable and supportive housing component seeks to serve, although it is unknown how many of the site's existing inhabitants would seek to live in the proposed project or be eligible for housing.

Because the proposed project would not displace any formal housing or authorized tenants, this impact is *less than significant*.

Significance without Mitigation: Less than significant.

POP-3	The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to population and housing.
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LRDP Update

As described under impact discussion POP-1, the proposed LRDP Update would accommodate a level of growth that would increase the local population from a combination of the direct growth resulting from the construction of new housing and indirect growth from unaccommodated students and faculty/staff seeking housing in the city; this combined increase in Berkeley residents would exceed the projected 2018 to 2037 population increase in ABAG's Projections 2040. In addition to growth from the proposed LRDP Update, cumulative development projects in the EIR Study Area and elsewhere in Berkeley would also contribute to local population growth. Chapter 5, Environmental Analysis, identifies several redevelopment projects currently in process in Berkeley that would create new housing. Under Mitigation Measure POP-1, UC Berkeley would provide regular updates to the City of Berkeley and ABAG for projection purposes, ensuring that the proposed LRDP Update does not contribute to any potential cumulative exceedance of local and regional projections.

As described under impact discussion POP-2, individual projects under the proposed LRDP Update may involve the displacement of existing site residents. Potential displacement effects would be addressed on a project-by-project basis, and UC Berkeley would work with displaced residents to identify and relocate them to alternate housing, consistent with State law and UC policy, as required in Mitigation Measure POP-2. Therefore, cumulative impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for proposed Housing Projects #1 and #2 is buildout under the proposed LRDP Update. These impacts are incorporated into the analysis of the proposed LRDP Update under impact discussions POP-1 and POP-2. As described in impact discussions POP-1 and POP-2, impacts are *less than significant*.

Significance without Mitigation: Less than significant.

5.13 PUBLIC SERVICES

This chapter describes the potential impacts to police, fire protection, schools, and library services that are associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions; identifies criteria used to determine impact significance; provides an analysis of the potential police, fire protection, schools, and library services impacts; and identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts.

Discussion and evaluation of impacts related to parks and recreation is provided in Chapter 5.14, Parks and Recreation, of this draft environmental impact report (Draft EIR).

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control property in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the cities of Berkeley and Oakland related to police, fire protection, schools, and library services that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

Appendix L, Public Services Data, of this Draft EIR, includes correspondence with public service agencies as part of the research and analysis of impacts on public services.

5.13.1 POLICE SERVICES

This section summarizes the regulatory framework, existing conditions, and potential impacts from the implementation of the proposed project related to police services.

5.13.1.1 ENVIRONMENTAL SETTING

Regulatory Framework

University of California

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley campus built environment. The Campus Design

Standards, along with applicable codes and policies, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing UC Berkeley buildings, infrastructure, grounds, and maintenance.

The University of California Police Department (UCPD) completes a plan review of proposed UC Berkeley buildings to maximize public safety features in and around proposed buildings. UC Berkeley's design review process, included in the Campus Design Standards, requires electronic safety and security systems, such as card access controls, intrusion detection, and emergency communications, to be coordinated with the UCPD system and requirements.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to police services as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP changes is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.13.1.3, Impact Discussion.

Local

City of Berkeley General Plan

The Berkeley General Plan Land Use (LU) element contains the following policy and action that are relevant to police services:

- Policy LU-36: University Impacts and Costs: Minimize the negative impacts of the size of the university population and university expansion on adjacent neighborhoods and the city as a whole.
 - Action B: Explore methods by which the university would pay for municipal services "in lieu" of tax payments.

In addition, relevant policy and actions in the Disaster Preparedness and Safety (S) element of the Berkeley General Plan include the following:

- Policy S-1: Response Planning: Ensure that the City's emergency response plans are current and incorporate the latest information on hazards, vulnerability, and resources.
 - Action A: Test, maintain, and revise the City's disaster response plan(s) consistent with the California Standardized Emergency Management System (SEMS) and establish clear coordination of roles and expectations with the County Office of Emergency Services, the University of California, the Berkeley Unified School District, neighboring jurisdictions, and other agencies.
 - Action D: City departments shall conduct an appropriate level of staff training addressing emergency readiness, evacuation routes, first aid, staging areas and procedures, continuity of services, and response and recovery operations and including CERT training for all City employees.
 - Action G: Conduct coordinated planning and training between local and regional police, fire, and public health agencies in preparation for natural and man-made disasters, and ensure that the City's

disaster response communication technologies are compatible with regional agency communication technologies.

City of Berkeley Public Agency Accountability Measure

The Public Agency Accountability Measure, Measure N, was approved in Berkeley in 1988 and states that public agencies should comply with local planning and zoning regulations and pay a fair share for provision of public services. Implementation of Measure N occurs on a project-by-project basis. One strategy in Measure N includes payment of fees in lieu of taxes for new student housing on private land by UC Berkeley.

City of Oakland General Plan

Policies relating to police services (PS) in the Oakland General Plan Safety Element include:

- Policy PS-1: Maintain and enhance the City's capacity to prepare for, mitigate, and respond to and recover from disasters and emergencies.
- Policy PS-2: Reduce the City's rate of violent crime, in particular the number of crime-related injuries and deaths, and the public fear which results from violent crime.

Existing Conditions

University of California Police Department

UC Berkeley has its own police department, the UCPD. While the primary jurisdiction of the UCPD is UC Berkeley-controlled properties, officers have authority for conducting criminal investigations and making arrests anywhere in the State of California. The department handles all patrol, investigation, crime prevention education, and related law enforcement duties for the UC Berkeley community, with services provided 24 hours per day, seven days a week. In addition, the UCPD operates with assistance from and in coordination with the Berkeley Police Department (BPD) through an operational agreement. This partnership includes interoperative radio capability, joint police records computer system, training programs, special events coordination, and investigation of serious incidents.

The UCPD operates a Community Service Officer Program and a Security Patrol Officer Program that do not have arrest authority. The Community Service Officer Program has a staff of approximately 60 part-time student employees and offers services including BearWALK, a night safety escort service, to students, faculty, and staff; nighttime patrol of residence halls and libraries; traffic control and assistance for football games; fire trail and Hill Campus patrol; and supplemental presence at concerts, sporting venues, and special events.¹ The Security Patrol Officer Program provides nonsworn, uniformed officers at UC Berkeley facilities to provide security and safeguard UC Berkeley property.

The UCPD is based at 1 Sproul Hall at the southern edge of the Campus Park. As part of the on-campus safety program, more than 130 emergency phones that connect to UCPD dispatch and are illuminated at all

¹ Berkeley University of California Police Department, Community Service Officer Program, <https://ucpd.berkeley.edu/services/community-service-officer-cso-program>, accessed June 16, 2020.

hours by a blue light, are spread throughout campus in public areas.² UCPD currently has a staff of 48 sworn police officers and 50 professional staff.³

Berkeley Police Department

As described above, the BPD provides services throughout the city of Berkeley, including in conjunction with UCPD for UC Berkeley properties. The BPD station is at 2100 Martin Luther King Jr. Way in Downtown Berkeley, approximately 0.4 miles west of the Campus Park. The BPD comprises several divisions, including the Office of the Chief, Operations Division, Professional Standards Division, Investigations Division, and Support Services Division. The Operations Division is the largest, and consists of the captain, 5 lieutenants, 14 sergeants, 78 officers, 16 reserve police officers, and an administrative assistant. The Operations Division operates 24-hour patrol operations across 16 geographic beats.⁴ In addition, the Community Services Bureau, under the Operations Division, divides the city into four areas, with area coordinators to act as liaisons to patrol officers and collaborate with other City departments or community organizations to address long-term issues.

The BPD currently has 162 sworn and 107 nonsworn personnel, for a total of 269 full-time-equivalent employees. The number of sworn officers is anticipated to drop by up to 15 percent in 2021 due to budgetary reductions and/or deferrals.⁵

Oakland Police Department

The Oakland Police Department is at 455 7th Street in Downtown Oakland. It is organized into three bureaus for services, field operations, and investigations. The Bureau of Services provides administration, accounting, communications, personnel, training, and records services. The Bureau of Field Operations handles neighborhood services, field support, special operations, and traffic operations. The Bureau of Investigations specializes in homicide, robbery and assault, property crimes, special victims, and narcotics.⁶ As of data from June 2019, the Oakland Police Department had 702 full-time-equivalent sworn officers out of an authorized 792.⁷

5.13.1.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact related to police services if it would:

² University of California, Berkeley, 2019 Annual Security and Fire Safety Report, page 2 through 5.

³ University of California Police Department, 2021.

⁴ City of Berkeley, Berkeley Police Department, Berkeley Police Operations Division, https://www.cityofberkeley.info/Police/Home/Operations_Division.aspx, accessed August 31, 2020.

⁵ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 30, 2020.

⁶ City of Oakland, 2004, Protect Oakland: City of Oakland General Plan Safety Element, Chapter 2, Public Safety, pages 13 and 14.

⁷ City of Oakland, 2019, Sworn Personnel Demographics, <https://www.oaklandca.gov/resources/sworn-personnel-demographics;https://app.powerbigov.us/view?r=eyJrIjoibmNTYyZGZlMzQzNiooYTE1LTkyMTYtMWUxZjk4OGQ2ODk2liwidCI6Ijk4OWEYMTgwLTZmYmMtNDdmMS04MDMyLTZhOWVlOTY5YzU4ZCJ9>, accessed August 31, 2020.

1. Result in substantial adverse physical impacts associated with the need for new or physically altered police facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police services.
2. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.13.1.3 IMPACT DISCUSSION

PS-1	Implementation of the proposed project would not result in the need for new or physically altered police facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.
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LRDP Update

Potential future development would occur on a limited number of parcels and in the form of infill/intensification on sites either already developed and/or underutilized, and/or in close proximity to existing development. Such locations are currently served by the UCPD and BPD and potential future development or redevelopment in the EIR Study Area would not expand the service area for the UCPD and BPD. Buildout of the proposed LRDP Update is projected to occur over an approximate 15-year horizon and any potential increases in demand for police protection services would generally be incremental.

While the EIR Study Area includes land in both the cities of Berkeley and Oakland, future potential development under the proposed LRDP Update would primarily be within the city of Berkeley boundaries. Limited development, including potential increased academic life space as well as necessary utility infrastructure upgrades, would occur within the city of Oakland boundaries. This type of development would not result in residential population changes within city of Oakland boundaries that would result in substantial demand to police services. In addition, as described in Chapter 5.12, Population and Housing, of this Draft EIR, the majority of the UC Berkeley population resides in the city of Berkeley, and anticipated population growth in the city of Oakland would be negligible when compared to the overall population growth anticipated in Oakland by the 2036–37 school year. Based on the minimal changes to the EIR Study Area under the proposed LRDP Update that would impact the Oakland Police Department, it is anticipated that the proposed project would not result in impacts to police services in the city of Oakland.

Because potential future development that would result in population changes under the proposed LRDP Update would primarily be in the city of Berkeley and UC Berkeley receives police services from the BPD as well as the UCPD, as part of the proposed project, UC Berkeley would implement the following public services (PS) CBP:

CBP PS-1: The University of California Police Department will continue its partnership with the City of Berkeley police department to review service levels in the City Environs Properties.

The ongoing implementation of CBP PS-1 would reduce potential impacts to police services through coordination between the UCPD and the BPD, which has police jurisdiction overlapping a significant portion of the populated EIR Study Area. The ongoing implementation of CBP PS-1, and the CBPs discussed

throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts to police services. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

The UCPD has a minimum staffing level goal of one sworn officer per 1,000 members of the total UC Berkeley population. The UCPD currently has 48 sworn officers and 50 professional staff—that is, 0.9 sworn officers per 1,000 members of the UC Berkeley population and 1.8 full-time employees per 1,000 members of the UC Berkeley population—which is below the UCPD’s staffing goal.⁸ This does not include part-time student employees contributing to the BPD staffing levels. However, though the UCPD is below its staffing level goal, it has not identified a need to expand its police facilities during the 2036-37 buildout horizon of this analysis.⁹

The BPD does not use a ratio-based approach to determine adequate staffing levels, but nationwide, the average rate of sworn officers is 2.4 per 1,000 inhabitants, and the average rate of full-time law enforcement employees, which includes civilian and sworn officers, is 3.4 per 1,000 inhabitants.¹⁰ The BPD has 162 sworn officers, or 1.33 sworn officers per 1,000 inhabitants, and 2.3 full-time law enforcement employees per 1,000 inhabitants, less than the national rates. However, though staffing levels are important for community safety, City of Berkeley staff has indicated that the BPD would not need new or physically altered police facilities in order to maintain or achieve acceptable service ratios, response times, or other performance objectives, the construction of which could cause significant environmental impacts, due to the proposed project.¹¹

As part of the preparation of the Draft EIR, the BPD was contacted concerning whether the proposed project would require the BPD to increase resources in order to maintain acceptable service ratios, response times, or other performance objectives. City staff has indicated that BPD facilities would not need to be expanded due to the proposed project; however, anticipated staffing reductions in 2021 would impact community safety by increasing response times and reducing services.¹² The reduction in staff has been due to the COVID-19 pandemic and budgetary decisions. The BPD indicated that increasing its staffing to previous levels will take several years depending on budget and departmental resources. Currently, the BPD has potential development plans to expand its Communications Center within the headquarters building in order to increase dispatch staff and consoles and address existing deficiencies.¹³

⁸ $(48 \text{ sworn officers}) \times (1,000) / (55,129) = 0.9 \text{ per } 1,000 \text{ inhabitants of the UC Berkeley population.}$

$(48 + 50 \text{ total employees}) \times (1,000) / (55,129) = 1.8 \text{ employees per } 1,000 \text{ inhabitants of the UC Berkeley population.}$

⁹ Breines, Raphael. Senior Planner, Physical & Environmental Planning, UC Berkeley. Personal communication with University of California Police Department. 2021.

¹⁰ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 1, 2020.

¹¹ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 1, 2020.

¹² Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 1, 2020.

¹³ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 1, 2020.

Because the BPD has indicated it would not need new or physically altered police facilities as a result of the proposed LRDP Update, and the UCPD also does not require new or physically altered police facilities due to the proposed LRDP Update, impacts to police services in this regard would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The two housing projects would result in new population that would represent a more intense use of the project sites. While the housing projects could increase the number of persons and level of activity on the project sites, given the sites are currently surrounded by residential and commercial land uses, it is reasonable to expect that the projects would not result in a meaningful increase in the need for police services in the project area. As discussed under the proposed LRDP Update, the UCPD would not need new or physically altered police facilities as a result of the buildout levels evaluated at the program level, which include Housing Projects #1 #2. In addition, as stated above, though the BPD has indicated a need for increased staffing, this is not due to implementation of the proposed LRDP Update and would not require construction of new or physically altered police facilities. Accordingly, the construction and operation of Housing Projects #1 & 2 would not result in the need for new or physically altered police facilities in order to maintain or achieve acceptable service ratios, response times, or other performance objectives, the construction of which could cause significant environmental impacts. Thus, impacts from Housing Projects #1 & #2 on police services would be *less than significant*.

Significance without Mitigation: Less than significant.

PS-2	Implementation of the proposed project, in combination with past, present and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to police services.
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LRDP Update

As discussed under impact discussion PS-1, the proposed project would not result in significant impacts to police services in that it would not require the need for new or physically altered police facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives. In combination with other projects for UC Berkeley, Lawrence Berkeley National Laboratory (LBNL), and the City of Berkeley, the proposed project could contribute to an increased cumulative demand on police services. However, because the city of Berkeley is already built out, none of these projects would increase the service area of the BPD, and it is therefore unlikely that they would contribute to a significant increase in the demand on police services such that new facilities would need to be constructed. Therefore, cumulative impacts from the proposed LRDP Update on police services would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. These impacts are incorporated into the analysis of the proposed LRDP Update under impact discussion PS-1. Because the cumulative impact for the proposed LRDP Update is less than significant, the same is true for Housing Project # 1 and #2.

Significance without Mitigation: Less than significant.

5.13.2 FIRE PROTECTION SERVICES

This section summarizes the regulatory framework, existing conditions, and potential impacts from the implementation of the proposed project related to fire protection services.

5.13.2.1 ENVIRONMENTAL SETTING

Regulatory Framework

Federal

The Campus Fire Safety Right-to-Know Act in the Higher Education Opportunity Act was signed on August 1, 2008. Specifically, the legislation requires that a fire safety report be distributed by UC Berkeley with statistics from the most recent calendar year for which data are available and for each on-campus student housing facility. The statistics must include:

- The number of fires and the cause of each fire.
- The number of injuries related to a fire that resulted in treatment at a medical facility.
- The number of deaths related to a fire.
- The value of property damage caused by a fire.
- A description of each on-campus student housing facility's fire safety system, including the fire sprinkler system.
- The number of regular mandatory supervised fire drills.
- Policies or rules on portable electrical appliances, smoking, and open flames (such as candles); procedures for evacuation; and policies regarding fire safety education and training programs provided to students, faculty, and staff.
- Plans for future improvements in fire safety, if determined necessary by such institution.

State

California Health and Safety Code

State fire regulations are in Sections 13000 et seq. of the California Health and Safety Code. This includes regulations for building standards (also in the California Building Code [CBC]), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

California Occupational Safety and Health Administration

In accordance with California Code of Regulations (CCR), Title 8, Sections 1270, Fire Prevention, and 6773, Fire Protection and Fire Equipment, the California Occupational Safety and Health Administration has established minimum standards for fire suppression and emergency medical services. The standards include guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

California Building Code

The State of California provides minimum standards for building design through the CBC (24 CCR Part 2). The CBC is based on the International Building Code but has been amended for California conditions and is revised and published every three years by the California Building Standards Commission. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. Commercial and residential buildings are plan-checked by local building officials for compliance with the CBC. Typical fire safety requirements of the CBC include the installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas.

California Fire Code

The California Fire Code (CFC) incorporates, by adoption, the International Fire Code of the International Code Council, with California amendments (24 CCR Part 9). Like the CBC, the CFC is revised and published every three years by the California Building Standards Commission. Also like the CBC, the CFC is effective statewide, but a local jurisdiction may adopt more restrictive standards based on local conditions.

The CFC includes provisions and standards for emergency planning and preparedness, fire service features, fire protection systems, hazardous materials, fire flow requirements, and fire hydrant locations and distribution. Typical fire safety requirements include installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas.

University of California

UC Berkeley's fire safety policy, issued on June 15, 2017, establishes responsibilities to ensure that the campus's fire safety systems are available, tested, maintained, and effective. The policy establishes a basic protocol for whom to notify in the event of accidental, uncontrolled, or extinguished fires and explosions. The UCPD must be notified first, and the UCPD will notify local emergency services as necessary. In addition, the policy explains the responsibilities of the Campus Fire Marshal, who works under UC Berkeley's Office of Environment, Health & Safety.¹⁴

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable policies, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to fire protection services as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.13.2.3, Impact Discussion.

Local

City of Berkeley General Plan

The Berkeley General Plan Land Use (LU) Element has policies and an action that are relevant to fire protection services:

- Policy LU-36: University Impacts and Costs: Minimize the negative impacts of the size of the university population and university expansion on adjacent neighborhoods and the city as a whole.
 - Action B: Explore methods by which the university would pay for municipal services "in lieu" of tax payments.

The Berkeley General Plan Disaster Preparedness and Safety Element also has policies and actions relevant to fire protection services:

- Policy S-1 Response Planning: Ensure that the City's emergency response plans are current and incorporate the latest information on hazards, vulnerability, and resources.

¹⁴ University of California, Berkeley, 2017, Fire Safety, <https://campuspol.berkeley.edu/policies/firesafety.pdf>, accessed August 28, 2020.

- Action B: Designate and publicize evacuation routes, shelter locations, and emergency service locations (hospitals, fire stations, etc.) within the city and sub region. Include existing city pathways and other pedestrian rights-of-way in the published designated evacuation route map. Prioritize undergrounding of utilities for designated routes to make them more reliable.
- Action D: City departments shall conduct an appropriate level of staff training addressing emergency readiness, evacuation routes, first aid, staging areas and procedures, continuity of services, and response and recovery operations and including CERT training for all City employees.
- Action F: Prepare an annual report in consultation with the Fire Safety Commission and other relevant Commissions and Boards on the state of preparedness in Berkeley.
- Action G: Conduct coordinated planning and training between local and regional police, fire, and public health agencies in preparation for natural and man-made disasters and ensure that the City's disaster response communication technologies are compatible with regional agency communication technologies.
- Policy S-15: Construction Standards: Maintain construction standards that minimize risks to human lives and property from environmental and human-caused hazards for both new and existing buildings.
 - Action A: Periodically update and adopt the California Building Standards Code with local amendments to incorporate the latest knowledge and design standards to protect people and property against known fire, flood, landslide, and seismic risks in both structural and non-structural building and site components.
- Policy S-16: Residential Density in the Hills: Consider changes to the existing residential zoning in high-risk, residential areas, such as the Hill Hazardous Fire Area, to reduce the vulnerability of these areas to future disasters.
 - Action B: Consider fire safety, evacuation, and emergency vehicle access when reviewing secondary unit or other proposals to add residential units in these areas.
- Policy S-21: Fire Preventive Design Standards: Develop and enforce construction and design standards that ensure new structures incorporate appropriate fire prevention features and meet current fire safety standards.
 - Action A: Strengthen performance review and code enforcement programs.
 - Action B: Promote the installation of built-in fire extinguishing systems and early warning fire alarm systems.
 - Action C: Maintain City standards for minimum width and vertical clearance and ensure that new driveways and roadways meet minimum standards of the Uniform Fire Code or subsequent standards adopted by the City.
 - Action D: Provide adequate water for fire suppression for new development in accordance with City standards for minimum volume and duration of flow.
 - Action E: Establish criteria for the installation of gas shutoff valves in new and existing construction, to reduce the risk of post-earthquake fires.
- Policy S-22: Fire Fighting Infrastructure: Reduce fire hazard risks in existing developed areas.
 - Action A: Develop proposals to make developed areas more accessible to emergency vehicles and reliable for evacuation. Consider restricting on-street parking, increasing parking fines in hazardous areas, and/or undergrounding overhead utilities. Require that all private access roads be maintained by a responsible party to ensure safe and expedient passage by the Fire Department at any time

- and require approval of all locking devices by the Fire Department. Ensure that all public pathways are maintained to provide safe and accessible pedestrian evacuation routes from the hill areas.
- Action B: Evaluate existing access to water supplies for fire suppression. Identify, prioritize, and implement capital improvements and acquire equipment to improve the supply and reliability of water for fire suppression. Continue to improve the water supply for firefighting to assure peak load water supply capabilities. Continue to work with East Bay Municipal Utility District (EBMUD) to coordinate water supply improvements. Develop aboveground (transportable) water delivery systems.
 - Action C: Provide properly staffed and equipped fire stations and engine companies. Monitor response time from initial call to arrival and pursue a response time goal of four minutes from the nearest station to all parts of the city. Construct a new hill area fire station that has wildland firefighting equipment and ability.
- Policy S-23: Property Maintenance: Reduce fire hazard risks in existing developed areas by ensuring that private property is maintained to minimize vulnerability to fire hazards.
 - Action A: Continue and expand existing vegetation management programs.
 - Action B: Property owners shall be responsible for maintaining their structures at a reasonable degree of fire and life safety to standards identified in adopted codes and ordinances.
 - Action C: Promote smoke detector installation in existing structures. Require the installation of smoke detectors as a condition of granting a permit for any work on existing residential and commercial buildings and as a condition for the transfer of property.
 - Action D: Promote fire extinguisher installation in existing structures, particularly in kitchens, garages, and workshops.
 - Action E: Require bracing of water heaters and gas appliances and the anchoring of houses to foundations to reduce fire ignitions following earthquakes.
 - Policy S-24: Mutual Aid: Continue to fulfill legal obligations and support mutual aid efforts to coordinate fire suppression within Alameda and Contra Costa Counties, Oakland, the East Bay Regional Park District, and the State of California to prevent and suppress major wildland and urban fire destruction.
 - Action A: Work with inter-agency partners and residents in vulnerable areas to investigate and implement actions to improve fire safety, using organized outreach activities and councils such as the Hills Emergency Forum and the Diablo Fire Safe Council.

City of Berkeley Public Agency Accountability Measure

The Public Agency Accountability Measure, Measure N, was approved in Berkeley in 1988 and states that public agencies should comply with local planning and zoning regulations and pay a fair share for provision of public services. Implementation of Measure N occurs on a project-by-project basis. One strategy in Measure N includes payment of fees in lieu of taxes for new student housing on private land by UC Berkeley.

City of Oakland General Plan

Chapter 4, Fire Hazards, of the Oakland General Plan Safety Element covers hazards posed by structural fires, industrial fires, and wildfires in the City of Oakland and resources that the City utilizes in firefighting and prevention. Policies relevant to fire prevention services in the Oakland General Plan Safety Element include:

- Policy FI-1: Maintain and enhance the City’s capacity for emergency response, fire prevention, and firefighting.
- Policy FI-2: Continue, enhance, or implement programs that seek to reduce the risk of structural fires.
- Policy FI-3: Prioritize the reduction of the wildfire hazard, with an emphasis on prevention.

Existing Conditions

University Fire Prevention

UC Berkeley does not have its own fire department or firefighting capabilities. For emergencies, UC Berkeley relies on response from Oakland Fire Department (OFD), Berkeley Fire Department (BFD), Moraga-Orinda Fire District, Alameda County Fire Department (ACFD), and/or California Department of Forestry and Fire Protection (CAL FIRE), depending on the area and severity of impact, and closest first responders available. UC Berkeley also works closely with internal and external fire management partners related to regional wildfire prevention, including the Hills Emergency Forum, Diablo Firesafe Council, and various neighborhood groups and internal interdisciplinary planning teams.

UC Berkeley’s Office of Environment, Health & Safety, staffed by health and safety professionals and hazardous materials technicians, provides inspections, plan review, and code consultation for fire prevention in all UC Berkeley-owned and -occupied buildings. The UC Berkeley Fire Prevention Division operates under UC Berkeley’s Office of Environment, Health & Safety. The Fire Prevention Division operates under a Memorandum of Understanding with the State Fire Marshal to provide inspections, plan review, and code consultation for UC Berkeley-owned and -occupied buildings. The Fire Prevention Division operates under the direction of the Campus Fire Marshal. In the event of a fire-related emergency, it is UC Berkeley policy to notify the UCPD, which will contact the BFD. Fire-related response and mitigation efforts are coordinated primarily between the UCPD, BFD, and the Campus Fire Marshal.¹⁵

In addition, the Office of Environment, Health & Safety responds to hazardous materials incidents reported on campus. Response times vary depending on the nature of the incident and nature and time of the spill. In the infrequent cases when outside assistance is required, UC Berkeley may request assistance from other nearby agencies, such as the BFD and ACFD, or from emergency response contractors.

Berkeley Fire Department

The BFD provides fire protection and emergency medical services (EMS) in the city of Berkeley and UC Berkeley campus. The BFD divides Berkeley into seven fire response districts, each of which has one fire station. The BFD also has a Division of Training Office and an Administration Office. The Berkeley Fire Department’s seven stations, Division of Training, Administrative Offices, and warehouse are at the following locations:¹⁶

¹⁵ University of California, Berkeley, June 15, 2017, Fire Safety Policy, <https://campuspol.berkeley.edu/policies/firesafety.pdf>, accessed June 16, 2020.

¹⁶ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 1, 2020.

- Station 1: 2442 Eighth Street
- Station 2: 2029 Berkeley Way
- Station 3: 2170 Russell Street
- Station 4: 1900 Marin Avenue
- Station 5: 2680 Shattuck Avenue
- Station 6: 999 Cedar Street
- Station 7: 3000 Shasta Road
- Division of Training: 997 Cedar Street
- Fire Warehouse: 1011 Folger

The EIR Study Area is in several of the BFD districts and served by multiple fire stations. The Campus Park, the Hill Campus West, and parts of the Hill Campus East are in Fire Response District 2 (Station 2). The Clark Kerr Campus is in Fire Response District 3 (Station 3), and the City Environs Properties are in Fire Response Districts 2, 3, and 5 (Stations 2, 3, and 5, respectively). Housing Project #1 is in Fire Response District 2, and Housing Project #2 is in Fire Response District 3.¹⁷

The BFD provides 24-hour response for emergencies, including fire suppression, medical emergencies, hazardous materials events, and other life-threatening situations. When calls are received, a fire company and an ambulance are dispatched from the closest fire station with firefighters that are trained paramedics and emergency medical technicians (EMT). For hazardous materials events, the BFD has a specially trained hazardous materials response team. The BFD also supports these efforts with fire prevention, disaster preparedness, and public education programs, as well as training for all BFD staff.

The City of Berkeley Adopted Biennial Budget for Fiscal Years 2020 and 2021 provides for 153 full-time-equivalent employees for the BFD. In 2019, BFD responded to 9,948 medical calls and 5,572 other calls for service. The BFD is required to respond to EMS calls in 10 minutes, 90 percent of the time and to calls made pursuant to Section 5150 of the California Welfare and Institutions Code in 40 minutes,¹⁸ 90 percent of the time.¹⁹

Oakland Fire Department

The OFD has primary responsibility for fighting fires within the city of Oakland; other services include conducting fire-safety inspections and plan checks of buildings, providing fire-danger patrols and issuing related public warnings, conducting vegetation management inspections, responding to hazardous materials spills, overseeing the Oakland Office of Emergency Services, issuing permits for special events, providing public first aid and CPR classes, providing emergency response training to local businesses, and teaching basic fire safety and prevention to school children. In addition, the OFD has an EMS division providing 24-hour paramedic services. Every fire station engine has at least one paramedic on staff, and all firefighters are certified EMTs. The OFD sponsors California Task Force 4, which is a team trained in urban search and rescue and which can be mobilized to respond to emergencies anywhere in the country.²⁰ The

¹⁷ City of Berkeley, 2014, City of Berkeley Fire Districts, https://www.cityofberkeley.info/uploadedFiles/IT/Level_3_-_General/FireDistricts1.pdf, accessed September 10, 2020.

¹⁸ Section 5150 of the California Welfare and Institutions Code allows a person with a mental illness to be involuntarily detained up to 72 hours in psychiatric hospitalization when they pose a danger to themselves or others.

¹⁹ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 1, 2020.

²⁰ City of Oakland, 2004, Protect Oakland: City of Oakland General Plan Safety Element, Chapter 4, Fire Hazards, pages 55 and 56.

OFD aims to respond to emergencies within seven minutes of notification 90 percent of the time; the Oakland General Plan notes that generally this can be accomplished for areas within 1.5 miles of a fire station.²¹

The OFD has 25 fire stations.²² Overlapping with the EIR Study Area, the OFD's service area only extends through the Hill Campus East. The nearest Oakland Fire Station to this area is the Oakland Fire Station Number 7, at 1006 Amato Avenue in the Claremont Hills, south of the Hill Campus East.

Alameda County Fire Department

Though the Hill Campus East is located within the cities of Berkeley and Oakland, the ACFD, Fire Station Number 19, is at LBNL just north of the Hill Campus East, and is potentially the closest responding fire station to incidents in the Hill Campus East. The Alameda County Fire Station Number 19 houses an engine company, patrol, and hazardous materials unit, provides services to LBNL and portions of the UC Berkeley campus, and provides automatic aid to the city of Berkeley.²³ The ACFD generally serves the unincorporated areas of Alameda County, excluding the community of Fairview; the cities of San Leandro, Dublin, Newark, Union City, and Emeryville; and the Lawrence Berkeley and Lawrence Livermore National Laboratories.

Wildland Fire Hazards

UC Berkeley participates in the Hills Emergency Forum or HEF, the goal of which is to coordinate the collection, assessment, and sharing of information regarding East Bay Hills fire hazards and to build interagency consensus on the development of fire safety standards and codes, incident response and management protocols, public education programs, multi-jurisdictional training, and fuel reduction strategies.²⁴ Member agencies of the Hills Emergency Forum include the City of Berkeley, City of El Cerrito, City of Oakland, CAL FIRE, EBMUD, East Bay Regional Park District, LBNL, Moraga-Orinda Fire District, and UC Berkeley. Wildfire hazards are discussed in more detail in Chapter 5.18, Wildfire, of this Draft EIR. UC Berkeley also works closely with other fire management partners for regional wildfire prevention, including the Diablo Firesafe Council and various neighborhood groups and internal interdisciplinary planning teams.

5.13.2.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact related to fire protection services if it would:

1. Result in substantial adverse physical impacts associated with the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order

²¹ City of Oakland, 2004, Protect Oakland: City of Oakland General Plan Safety Element, Chapter 4, Fire Hazards, page 59.

²² City of Oakland, 2004, Protect Oakland: City of Oakland General Plan Safety Element, Chapter 4, Fire Hazards, page 59.

²³ Alameda County Fire Department, 2019, Fire Stations / Facilities, <https://www.acgov.org/fire/about/station19.htm>, accessed August 31, 2020.

²⁴ Hills Emergency Forum, 2020, <http://www.hillsemergencyforum.org/mission-goals.html>, accessed August 28, 2020.

to maintain acceptable service ratios, response times, or other performance objectives for fire protection services.

2. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.13.2.3 IMPACT DISCUSSION

PS-3	Implementation of the proposed project would not result in the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.
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LRDP Update

As discussed under impact discussion PS-1, while potential future development would occur on a limited number of parcels and in the form of infill/intensification on sites either already developed and/or underutilized, and/or in close proximity to existing development. Such locations are currently served by the OFD, BFD, Moraga-Orinda Fire District, ACFD, and CAL FIRE and potential future development or redevelopment in the EIR Study Area would not expand the service area for these service providers. Buildout of the proposed LRDP Update is projected to occur over an approximate 15-year horizon and any increases in demand for fire protection services would generally be incremental.

Though the EIR Study Area includes territory in both the cities of Berkeley and Oakland, future potential development under the proposed LRDP Update would primarily be in the city of Berkeley. In addition, as described in Chapter 5.12, Population and Housing, of this Draft EIR, the majority of the UC Berkeley population resides in the city of Berkeley. Potential future development within the Hill Campus East would include academic life space as well as potential utility infrastructure upgrades and additions. However, the majority of the Hill Campus East would remain unchanged. Under the proposed LRDP Update, the changes to the parts of the EIR Study Area in the city of Oakland are minimal and therefore not anticipated to substantially affect the OFD or result in impacts to fire protection services in the city of Oakland.

As described above, while UC Berkeley has a Fire Prevention Division that provides inspections, plan review, and code consultation, it relies on the BFD for fire response services and EMS within Berkeley, which are coordinated between the UCPD, BFD, and UC Berkeley's Campus Fire Marshal. Potential future development under the proposed LRDP Update would occur on existing UC Berkeley properties within an already urbanized setting. Though development would not require expansion of the BFD's service area and would occur incrementally over time, it would accommodate an increase in the UC Berkeley staff, faculty, and resident populations served by the BFD.

According to correspondence with the City of Berkeley, the BFD has existing deficiencies regarding dispatch, mental health care infrastructure, and hazardous materials response. The BFD dispatch center lacks the capability to prioritize resources because staffing and response are inefficient. Priority dispatching would allow the department to improve efficiency in response and expansion to meet the needs of the growing city population and built environment, including UC Berkeley. Also, since the County's mental

health care infrastructure is lacking, the City of Berkeley's resources are heavily used in a time-consuming and ineffective patient care model.²⁵ UC Berkeley does, however, also provide a health center with services including counseling and mental health support for university affiliates which helps to alleviate demand on services outside of UC Berkeley.²⁶ Finally, the BFD's hazardous materials response team does not meet requirements to be rated as an official response team.²⁷

Furthermore, the BFD indicated that projected population growth and development proposed by UC Berkeley over the buildout horizon of the proposed LRDP Update would require significant additional resources and facilities in order for the BFD to adequately respond to calls for service. Resources the BFD indicates it would need include an aerial ladder truck, type 1 fire engine, ambulance, mobile air supply truck, and battalion chief to accommodate the increased density and height of projects under the proposed LRDP Update. An air supply vehicle would reduce the number of firefighters needed to respond to a high-rise fire, because it would supply air to the required building air system so that firefighters could re-fill air bottles inside the building instead of carrying them up and down the stairs. The BFD indicated that a new facility would need to be close to the Campus Park to house these additional resources, and the BFD's Division of Training building would need to be expanded to meet additional training demands of a larger department.²⁸

As part of the proposed project, UC Berkeley and future development projects would implement the following public services (PS) CBP, which has been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

CBP PS-2 (Updated): UC Berkeley will continue its partnership with the Lawrence Berkeley National Laboratory, Alameda County Fire Department, OFD, and Berkeley Fire Department to ensure adequate fire and emergency service levels to UC Berkeley facilities. This partnership will include consultation on the adequacy of emergency access routes to all new UC Berkeley buildings. UC Berkeley will also continue to work closely with external fire management partners related to regional wildfire prevention, including the Hills Emergency Forum, Diablo Firesafe Council, and various neighborhood groups and internal interdisciplinary planning teams.

CBP PS-2 would reduce potential impacts to fire protection services through coordination between the various fire prevention resources within the EIR Study Area, as coordinated efforts increase resources available from multiple sources instead of only relying on one. The ongoing implementation of CBP PS-2, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts to fire protection services. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

²⁵ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 1, 2020.

²⁶ UC Berkeley, 2021, University Health Services, <https://uhs.berkeley.edu/home>, accessed February 28, 2021.

²⁷ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 1, 2020.

²⁸ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 1, 2020.

In addition, potential future development would be required to comply with applicable codes, such as the CFC, CBC, California Health and Safety Code, and CCR Title 8, pertaining to fire prevention. Compliance with such policies ensures that buildings incorporate fire mitigation components to reduce risks, which in turn reduces pressure on local emergency resources. While compliance with applicable regulations reduces the likelihood of catastrophic fires, it does not reduce demands on local resources needed to respond to fire alarms, smaller fires, and emergency medical calls. Also, according to the CEQA Guidelines, CEQA is not concerned with public safety response levels themselves, but with the physical impacts to the environment that are caused from potential construction or modification of facilities in order to maintain the public safety response levels. However, BFD indicated that new and modified facilities would be required to accommodate additional resources needed. As determined under *City of Hayward v. Trustees of the California State University* (242 Cal.App.4th [2015]), it is not UC Berkeley's responsibility to build a new fire station, but only to mitigate the physical impacts of construction of such facilities if they are determined necessary as a result of the proposed project. Therefore, if and when the City of Berkeley would decide to construct a new facility in order to accommodate additional resources, UC Berkeley would negotiate its proportional share of funding for the mitigation of any environmental impacts resulting from the construction of the facility. Because the BFD would expand to meet the needs of the growing community and UC Berkeley population, with or without the proposed LRDP Update, the impact generated by the implementation of the proposed LRDP Update related to fire protection services would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Fire protection services for Housing Project #1 would include UC Berkeley's Fire Prevention Division and the BFD. In particular, the BFD would provide fire response services and EMS. Housing Project #1 would increase density at the project site, which could therefore result in an increased demand on BFD services because more people would be on-site. As described under the proposed LRDP Update, proposed building height, which at 14 stories above ground would be taller than most buildings in the surrounding area and taller than existing conditions on-site, poses potential response challenges that the BFD indicates would need to be addressed by additional equipment such as an aerial ladder truck and air supply vehicle that would reduce the number of firefighters needed to respond to a high-rise fire. However, Housing Project #1 would include "fire service access elevators," which are specifically designed to allow firefighters and first responders to use the elevator to quickly access higher floors in the event of an emergency. (Standard elevators should not be used in emergencies because they may not have safety features to operate properly during a fire and can become stuck and trap occupants.) The inclusion of fire service access elevators would reduce the potentially increased demand that a high-rise building would impose on fire protection services, personnel, and resources in the event of an emergency.

In addition, as described under the proposed LRDP Update, the BFD would expand to meet the needs of the growing community and UC Berkeley population with or without the proposed project, and if and when the City of Berkeley decides to construct a new facility to accommodate additional resources, UC Berkeley would negotiate its proportional share of funding for the mitigation of any environmental impacts resulting

from the construction of the facility. Therefore, impacts from Housing Project #1 would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Similar to Housing Project #1, though Housing Project #2 would rely on fire protection services from the BFD, Housing Project #1 would increase density at the project site, which could result in an increased demand on BFD services. In addition, the proposed building height, which would be up to 17 stories and taller than most buildings in the surrounding area, could require more firefighters to respond in the event of a high-rise fire, which would also increase demands on the BFD. As discussed above, the City of Berkeley indicated that the increased population and density and higher buildings of the proposed LRDP Update would result in the need for a new BFD facility to adequately serve the increased UC Berkeley population and manage fire-related concerns for increased building densities and heights. However, as described under the proposed LRDP Update, the BFD would expand to meet the needs of the growing community and UC Berkeley population with or without the proposed project, and if and when the City of Berkeley decides to construct a new facility to accommodate additional resources, UC Berkeley would negotiate its proportional share of funding for the mitigation of any environmental impacts resulting from the construction of the facility. Therefore, impacts from Housing Project #2 would be *less than significant*.

Significance without Mitigation: Less than significant.

PS-4	Implementation of the proposed project, in combination with past, present and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to fire protection services.
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LRDP Update

While compliance with applicable regulations reduces the likelihood of catastrophic fires, it does not reduce demands on local resources needed to respond to fire alarms, smaller fires, and emergency medical calls. Also, according to the CEQA Guidelines, CEQA is not concerned with public safety response levels themselves, but with the physical impacts to the environment that are caused from potential construction or modification of facilities in order to maintain the public safety response levels. However, BFD indicated that new and modified facilities would be required to accommodate additional resources needed. As determined under *City of Hayward v. Trustees of the California State University* (242 Cal.App.4th [2015]), it is not UC Berkeley's responsibility to build a new fire station, but only to mitigate the physical impacts of construction of such facilities if they are determined necessary as a result of the proposed project. Therefore, if and when the City of Berkeley would decide to construct a new facility in order to accommodate additional resources, UC Berkeley would negotiate its proportional share of funding for the mitigation of any environmental impacts resulting from the construction of the facility.

As discussed under impact discussion PS-3 above, the proposed LRDP Update would result in less-than-significant environmental impacts to fire protection services. Chapter 5, Environmental Analysis, includes a list of cumulative projects in the surrounding area. The addition of other development projects that could increase city populations could further exacerbate existing deficiencies and future needs in fire protection services, necessitating the construction of new facilities that could result in significant environmental impacts. The BFD would expand to meet the needs of the growing community and UC Berkeley population, with or without the proposed LRDP Update. UC Berkeley would negotiate its proportional share of funding for the mitigation of any environmental impacts resulting from the construction of a new fire protection services facility, if and when the City of Berkeley would decide to construct a new facility in order to accommodate additional resources, cumulative impacts resulting from the proposed project would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. These impacts are incorporated into the analysis of the proposed LRDP Update under impact discussion PS-4.

Significance without Mitigation: Less than significant.

5.13.3 SCHOOLS

This section summarizes the regulatory framework, existing conditions, and potential impacts from the implementation of the proposed project related to public schools.

5.13.3.1 ENVIRONMENTAL SETTING

Regulatory Framework

State

California Code of Regulations

The California Code of Regulations, Title 5 Education Code, governs all aspects of public education within the State.

Senate Bill 50

Senate Bill (SB) 50 (funded by Proposition 1A, approved in 1998) limits the power of cities and counties to require mitigation of school facilities impacts as a condition of approving new development and provides instead for a standardized developer fee. SB 50 generally provides for a 50/50 State and local school facilities funding match. SB 50 also provides for three levels of statutory impact fees. The maximum allowable fee is \$3.79 per square foot for residential development and \$0.61 per square foot for commercial

and industrial development. In setting the fees, school districts must prepare nexus studies to demonstrate a reasonable connection between new development and the need for school improvements. The fees may only be used to finance the construction or modernization of school facilities. The fee application level depends on whether State funding is available, whether the school district is eligible for State funding, and whether the school district meets certain additional criteria involving bonding capacity, year-round school, and the percentage of moveable classrooms in use.

SB 50 amended California Government Code Section 65995, which contains limitations on Education Code Section 17620, the statute that authorizes school districts to assess development fees within school district boundaries. Government Code Section 65995(b)(3) requires the maximum square footage assessment for development to be increased every two years, according to inflation adjustments. On January 22, 2014, the State Allocation Board approved increasing the allowable amount of statutory school facilities fees (Level I School Fees) from \$3.20 to \$3.36 per square foot of assessable space for residential development of 500 square feet or more, and from \$0.51 to \$0.54 per square foot of chargeable covered and enclosed space for commercial/industrial development. According to California Government Code Section 65995(3)(h), the payment of statutory fees is “deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization...on the provision of adequate school facilities.” The school district is responsible for implementing the specific methods for mitigating school impacts under the Government Code.

Mitigation Fee Act

Assembly Bill 1600, the Mitigation Fee Act, requires a local agency establishing, increasing, or imposing an impact fee as a condition of development to identify the purpose of the fee and the use to which the fee is to be put.²⁹ The agency must also demonstrate a reasonable relationship between the fee and the purpose for which it is charged, and between the fee and the type of development project on which it is to be levied. This Act became enforceable on January 1, 1989.

Local

City of Berkeley General Plan

The Berkeley General Plan Land Use (LU) Element has policies and an action that are relevant to public schools within Berkeley, excluding UC Berkeley:

- Policy LU-13: Basic Goods and Services: Ensure that neighborhoods are well served by commercial districts and community services and facilities, such as parks, schools, child-care facilities, and religious institutions.
 - Action B: Maximize joint City/Unified School District use of and planning for facilities such as recreation, libraries, and cultural centers.

²⁹ California Legislative Information, California Law, Code Section Group, Government Code Sections 66000–66008, https://leginfo.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=1.&title=7.&part=&chapter=5.&article=, accessed on April 8, 2020.

- Policy LU-14: Community Service Centers: Work with the Berkeley Unified School District and the University of California to establish a network of community centers including school sites, neighborhood resource centers, and City facilities that offer community services such as childcare, health care, and recreational programs.
- Policy LU-15: Service and Institutional Use Locations: Wherever possible, locate public and private institutional uses and community service centers that serve the city residents or have a regional-service orientation on transit corridors so that they are accessible to public transportation and will not disrupt adjacent residential areas.
- Policy LU-42: Berkeley Unified School District: Encourage the Berkeley Unified School District to adopt a resolution to make the School District's land use decisions subject to the Berkeley Zoning Ordinance and the Landmarks Preservation Ordinance.

City of Oakland General Plan

Policies pertaining to public schools are in the Oakland General Plan Land Use and Transportation Element, including:

- Policy N2.1: Designing and Maintaining Institutions: As Institutional uses are among the most visible activities in the City and can be sources of community pride, high-quality design and upkeep/maintenance should be encouraged. The facilities should be designed and operated in a manner that is sensitive to surrounding residential and other uses.
- Policy N2.2: Providing Distributed Services: Provision of government and institutional services should be distributed and coordinated to meet the needs of City residents.
- Policy N2.3: Supporting Institutional Facilities: The City should support many uses occurring in institutional facilities where they are compatible with surrounding activities and where the facility site adequately supports the proposed uses.
- Policy N2.4: Locating Services Along Major Streets: New large scale community, government, and institutional uses should be located outside of areas that are predominantly residential. Preferably, they should be located along major thoroughfares with easy access to freeways and public transit or in the Downtown.
- Policy N2.5: Balancing City and Local Benefits of Institutions: When reviewing land use permit applications for the establishment or expansion of institutional uses, the decision-making body should take into account the institution's overall benefit to the entire Oakland community, as well as its effects upon the immediately surrounding area.
- Policy N2.8: Long Range Development Planning: Require, where legally allowed, and in all other situations encourage, those institutions designated with the Institutional land use classification should be required to present Long Range Operation and Development Plans to the City Planning Commission. While these plans could be binding or non-binding, they should present realistic information regarding the continued operation and/or expansion of the facilities. The City suggests that substantial public input be built into the process of developing the plans. The plans could be required as part of development applications, or on a periodic basis.
- Policy N12.2: Making Schools Available: Adequate public school capacity should be available to meet the needs of Oakland's growing community. The City and the Oakland Unified School District (OUSD)

should work together to establish a continuing procedure for coordinating residential and commercial development and exploring residential and commercial development and exploring the imposition of mutually agreed upon reasonable and feasible strategies to provide for adequate school capacity. The City and OUSD should jointly consider where feasible and appropriate, finding mechanisms such as assessment districts, Redevelopment Agency funding (AB 1290), use of surplus, City-owned land, bond issues, and adjacent or shared use of land or school facilities with recreation, libraries, childcare, and other public uses.

Existing Conditions

Public K–12 schools in the cities of Berkeley and Oakland are part of the Berkeley Unified School District (BUSD) and Oakland Unified School District (OUSD).

Berkeley Unified School District

BUSD serves all residents of Berkeley, including more than 9,800 students across 11 elementary schools, 3 middle schools, a comprehensive high school, and an alternative high school. BUSD also has 3 preschools and an adult school serving several thousand more students each year.³⁰

The nearest public K-12 schools to the EIR Study Area include Washington Elementary School at 2300 Martin Luther King Jr Way, 0.4 miles from the Campus Park; and Berkeley High School at 1980 Allston Way, 0.2 miles west of the Campus Park. Additional BUSD schools are located throughout Berkeley.

Table 5.13-1, Berkeley Unified School District Enrollment Data, shows enrollment data in BUSD between the 2014–15 academic school year and the 2019–20 academic school year. Overall enrollment has decreased over the last five years.

TABLE 5.13-1 BERKELEY UNIFIED SCHOOL DISTRICT ENROLLMENT DATA

Academic Year	Total Enrollment
2014-15	10,442
2015-16	10,462
2016-17	10,239
2017-18	10,340
2018-19	10,194
2019-20	9,844

Source: California Department of Education, 2020, Data Quest: Enrollment Multi-year Summary by Grade, Berkeley Unified Report, 2019-20. <https://dq.cde.ca.gov/dataquest/dqcensus/EnrGrdYears.aspx?cds=0161143&aggllevel=district&year=2019-20>, accessed December 11, 2020.

³⁰ Berkeley Unified School District, 2020, About Berkeley Unified School District, <https://www.berkeleyschools.net/about-the-district/about/>, accessed February 23, 2021.

Oakland Unified School District

OUSD serves all residents of Oakland and comprises 83 district-run schools—48 elementary schools, 5 grade K-8 schools, 12 middle schools, 3 grade 6-12 schools, 7 high schools, 6 alternative high schools, and an independent study program. In addition, there are 33 district-authorized charter schools, including 8 elementary schools, 8 grade K-8 schools, 3 middle schools, 6 grade 6-12 schools, 7 high schools, and an alternative high school. These schools serve a total of 49,245 students as of the 2019–20 school year.³¹

The nearest OUSD schools to the EIR Study Area include Peralta Elementary School at 460 63rd Street, 1.3 miles south of the Campus Park; Chabot Elementary School at 6686 Chabot Road, 1.4 miles southeast of the Campus Park; and Sankofa United Elementary School at 581 61st Street, 1.5 miles south of the Campus Park.

5.13.3.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact related to schools if it would:

1. Result in substantial adverse physical impacts associated with the need for new or physically altered school facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable performance objectives for school services.
2. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.13.3.3 IMPACT DISCUSSION

PS-5	Implementation of the proposed project could result in the need for new or physically altered school facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable performance objectives.
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LRDP Update

The proposed project would result in significant environmental impacts to school facilities if it were to result in increases to school attendance that would require the need for new or physically altered school facilities in order to maintain acceptable performance objectives, the construction of which could cause significant environmental impacts. Estimating the proposed project's impact to local public schools is based on housing provided under the proposed LRDP Update that would accommodate families with school-aged children that could attend local public schools.

The proposed LRDP Update does not anticipate developing UC Berkeley housing that accommodates families with school-aged children (e.g., faculty and graduate housing) in the portion of the EIR Study Area in the city of Oakland. Though some future employees of UC Berkeley could reside in Oakland and have family members that would attend public schools in Oakland, this would depend on available housing and, as described in Chapter 5.12, Population and Housing, would be a negligible amount when compared to the

³¹ Oakland Unified Schools District, 2020, Fast Facts 2019-20, produced by the Department of Research, Assessment, and Data.

anticipated population growth in Oakland by the 2036–37 school year. Student and faculty/staff families living in the city of Oakland would move into existing housing, which would have potentially already undergone environmental review to determine impacts to public schools, or new housing that would potentially undergo separate environmental review as applicable. Therefore, it is not anticipated that the proposed LRDP Update would result in impacts to school facilities in the city of Oakland.

Potential future housing development under the proposed LRDP Update that could accommodate families with school-aged children attending local public schools would be located within the city of Berkeley. Though undergraduate housing would not accommodate families, some faculty and graduate student housing could, and therefore could contribute to BUSD enrollment numbers. In addition, unaccommodated graduate and faculty/staff households who reside in Berkeley could contribute to BUSD enrollment; however, these households would be expected to reside in existing housing that has potentially already undergone previous environmental review depending on time of construction, or new housing that would be subject to its own separate environmental review under CEQA. These non-UC Berkeley housing are also assumed to have paid school impact fees that the California State Legislature has deemed sufficient to provide full and complete school facilities mitigation. Depending on which school in the BUSD that new students would attend, an increase in enrollment could result in the need for new or physically altered school facilities.

Enrollment growth associated with the increased UC Berkeley population in new housing units would be gradual as housing projects are constructed. As shown in Table 5.12-7, Projected Housing Changes in the EIR Study Area, in Chapter 5.12, Population and Housing, the proposed LRDP Update is expected to result in a net new increase of approximately 549 new faculty/staff housing units and 11,073 new student housing units; of the student housing units, 2,065 would be for graduate students. Therefore, it is expected that the proposed LRDP Update would add 2,614 new housing units that could contribute to increased enrollment in BUSD (549 faculty/staff units + 2,065 graduate students housing units).

As shown in Table 5.13-1, Berkeley Unified School District Enrollment Data, enrollment in BUSD has been decreasing over the last five years. Because of this downward trend, it is possible that enrollment in BUSD due to the proposed LRDP Update would be within school capacity levels and BUSD could accommodate the increase in students. In communications regarding the proposed project, BUSD staff stated that it does not currently use enrollment projections in its Facilities Master Plan because BUSD enrollment has remained relatively static in recent years.³² BUSD staff did not indicate what current school capacity levels are. A 2014 student population projections report prepared by Davis Demographics & Planning for BUSD, based on information provided by BUSD including school location and capacity, indicated that BUSD student population is projected to increase by 1,588 potential students (including all school grades) by 2020, from an enrollment of 9,572 students in fall of 2013.³³ As enrollment has decreased in recent years, BUSD has not reached these levels anticipated or planned for by 2020.

³² McDermott, Trish. Public Information Officer, Berkeley Unified School District. Personal email communication with PlaceWorks. February 18, 2021.

³³ Davis Demographics & Planning, 2014, Student Population Projections by Residence Fall 2013 – Fall 2020, Berkeley Unified School District, Berkeley, CA. <https://www.berkeleyschools.net/wp-content/uploads/2015/01/DavisDemographic-2013-Study.pdf>, accessed February 25, 2021.

While it is not known where all students potentially generated from UC Berkeley faculty/staff and graduate housing would attend schools, the following discussion conservatively assumes that all new students would attend BUSD schools. Applying the student yield factor used in the 2014 Davis Demographics & Planning report, 0.076, to the 2,614 potential new housing units that could accommodate families with school-aged children under the proposed LRDP Update, would result in approximately 199 students that could attend BUSD as a result of the proposed project.

The current LRDP EIR listed a total capacity of BUSD schools of 11,904 students.³⁴ Assuming capacity has not decreased (i.e., BUSD schools have permanently closed) since the 2005 certification of the current LRDP EIR, the potential increase of 199 BUSD students resulting from the LRDP Update would not likely exceed capacity, nor do so to the extent that construction of new or modified facilities would need to occur. However, because of a lack of recent BUSD capacity information, this evaluation conservatively assumes that the proposed faculty/staff and graduate housing from implementation of the proposed LRDP Update could exceed the existing capacity of BUSD to the extent that the construction or expansion of school facilities is needed. Furthermore, an impact could occur because facility requirements for BUSD also depend on where future students reside, which is unknown at the programmatic level of the LRDP Update. Therefore, impacts are considered *significant*.

Impact PS-5: Student population growth contributed to Berkeley Unified School District from construction of housing under the LRDP Update that could support families has the potential to result in the need for new or modified school facilities, the construction of which could result in environmental impacts.

Mitigation Measure PS-5: UC Berkeley will, on an annual basis, provide housing production projections to the Berkeley Unified School District (BUSD) for the purpose of ensuring that BUSD enrollment projections account for UC Berkeley-related population changes, when UC Berkeley anticipates increasing its housing stock that would serve families which could potentially attend the BUSD. UC Berkeley's Office of Physical & Environmental Planning shall verify compliance with this measure.

Significance with Mitigation: Significant and unavoidable. Through Mitigation Measure PS-1, UC Berkeley would provide regular updates to the BUSD for facility planning purposes, ensuring that BUSD facility plans are prepared with knowledge of UC Berkeley faculty/staff and graduate housing projections. Because it is unknown which BUSD school future school-aged children would potentially attend and because the current student capacity of the BUSD is unknown, no additional mitigation measures are available to ensure construction of a new BUSD school or modification of an existing school may be required. The identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects that demonstrate they would not generate school-age children that exceed BUSD capacity. However, due to the programmatic nature of the proposed LRDP Update, no additional mitigation measures are available, and the impact is considered *significant and unavoidable*.

³⁴ University of California, Berkeley, certified Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies EIR, 2005, State Clearinghouse Number 2003082131.

Housing Projects #1 & #2

The housing units provided by Housing Project #1 & #2 would not accommodate families with school-aged children. It is expected that employees of the future nonresidential uses already live in the region, and the number of employees working on the site would not be substantial enough to generate population growth. Therefore, impacts on school services from Housing Projects #1 and #2 would be *less than significant*.

Significance without Mitigation: Less than significant.

PS-6	Implementation of the proposed project, in combination with past, present, and reasonably foreseeable projects, could result in significant cumulative impacts with respect to school services.
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LRDP Update

As described under impact discussion PS-5, potential future faculty/staff and graduate housing under the proposed LRDP Update could contribute to increased enrollment in public school facilities, particularly for the BUSD. Because the current capacity levels of BUSD facilities are unknown and due to the programmatic nature of the LRDP Update it is unknown which school students would attend, impacts to BUSD were considered significant. Implementation Mitigation Measure PS-1 would be required to inform BUSD planning efforts to ensure BUSD schools have adequate capacity.

Potential future cumulative projects identified in Chapter 5, Environmental Evaluation, would have the potential to also generate school-aged children that could attend BUSD and OUSD schools. Additional enrollment could result in the need for the construction of new or expanded public school facilities is, which could cause environmental impacts. The cumulative projects would be subject to developer fees pursuant to SB 50 which the California State Legislature has deemed sufficient to provide full and complete school facilities mitigation. However, since UC Berkeley is not subject to these fees, it could contribute to cumulative impacts. Therefore, the proposed project could result in a cumulatively considerable impact to school facilities and cumulative impacts would be *significant*.

Impact PS-6: Student population growth contributed to Berkeley Unified School District from construction of housing under the LRDP Update, in combination with past, present, and reasonably foreseeable projects, has the potential to result in the need for new or modified school facilities, the construction of which could result in environmental impacts.

Mitigation Measure PS-6: Implement Mitigation Measure PS-5.

Significance with Mitigation: Significant and unavoidable. Through Mitigation Measure PS-5, UC Berkeley would provide regular updates to the BUSD for facility planning purposes, ensuring that BUSD facility plans are prepared with knowledge of UC Berkeley faculty/staff and graduate housing projections. Because it is unknown which BUSD school future school-aged children would potentially attend and because the current student capacity of the BUSD is unknown, no additional mitigation measures are available to ensure construction of a new BUSD school or modification of an existing

school may be required. However, due to the programmatic nature of the proposed LRDP Update, no additional mitigation measures are available, and the impact is considered *significant and unavoidable*.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. These impacts are incorporated into the analysis of the proposed LRDP Update under impact discussion PS-6.

Significance without Mitigation: Less than significant.

5.13.4 LIBRARIES

This section summarizes the regulatory framework, existing conditions, and potential impacts from the implementation of the proposed project related to libraries.

5.13.4.1 ENVIRONMENTAL SETTING

Regulatory Framework

University of California

UC Berkeley's Library Strategic Plan 2017–2021 provides guidance for continual enhancement of the UC Berkeley Library in order to maximize resources provided to UC Berkeley students, staff, and faculty. The Strategic Plan contains four main directions: to improve how scholars access resources; help develop emerging areas of scholarship; grow as an adaptive learning organization; and tell a story to build community and cultivate relationships. The strategies for accomplishing these main directions include adopting new strategies for purchasing, licensing, and preserving materials; increasing digitalization; supporting emerging areas of research; and providing the public community with a rich array of opportunities for learning, research, and enrichment.

Local

City of Berkeley General Plan

The Berkeley General Plan Land Use (LU) Element contains the following policies and action that are relevant to libraries:

- Policy LU-13: Basic Goods and Services: Ensure that neighborhoods are well served by commercial districts and community services and facilities, such as parks, schools, child-care facilities, and religious institutions.
- Policy LU-14: Community Service Centers: Work with the Berkeley Unified School District and the University of California to establish a network of community centers including school sites, neighborhood resource centers, and City facilities that offer community services such as childcare, health care, and recreational programs.

- Policy LU-36: University Impacts and Costs: Minimize the negative impacts of the size of the university population and university expansion on adjacent neighborhoods and the city as a whole.
 - Action B: Explore methods by which the university would pay for municipal services “in lieu” of tax payments.
- Policy LU-40: Public Use of University Facilities and Grounds: Continue to support maximum opportunities for citizen use of university libraries and recreational facilities, the maintenance of the hill lands as open space, and the adoption of campus development standards and policies to conserve and enhance present open space resources.

Public Agency Accountability Measure

The Public Agency Accountability Measure, Measure N, was approved in Berkeley in 1988 and states that public agencies should comply with local planning and zoning regulations and pay a fair share for provision of public services. Implementation of Measure N occurs on a project-by-project basis. One strategy includes payment of fees in lieu of taxes for new student housing on private land by UC Berkeley.

Existing Conditions

University Library

The UC Berkeley Library is a system consisting of 24 libraries throughout the campus, the collections of which comprise more than 13 million volumes:

- | | |
|--|--------------------------------------|
| ▪ Anthropology | ▪ Main (Gardner) Stacks |
| ▪ Art History and Classics | ▪ Mathematics and Statistics |
| ▪ Bancroft | ▪ Media Resources Center |
| ▪ Bioscience, Natural Resources, and Public Health | ▪ Moffitt |
| ▪ Business | ▪ Morrison |
| ▪ Chemistry | ▪ Music |
| ▪ Doe | ▪ Newspapers and Microforms |
| ▪ Earth Sciences and Map | ▪ Northern Regional Library Facility |
| ▪ East Asian | ▪ Optometry |
| ▪ Engineering | ▪ Physics and Astronomy |
| ▪ Environmental Design | ▪ Social Research |
| ▪ Graduate Services | ▪ South and Southeast Asia |

In addition, the UC Berkeley Library has nine affiliated libraries:

- | | |
|---------------------------------|--------------------------|
| ▪ BAMPFA Film | ▪ Law |
| ▪ CED Visual Resources Center | ▪ Robbins Collection |
| ▪ Environmental Design Archives | ▪ Transportation Studies |
| ▪ Ethnic Studies | ▪ Earthquake Engineering |
| ▪ Governmental Studies | |

Berkeley Public Library

The City of Berkeley operates five branches of the Berkeley Public Library at the following locations:³⁵

- Central Library: 2090 Kittredge Street
- Claremont Branch: 2940 Benvenue Avenue
- North Branch: 1170 The Alameda
- Tarea Hall Pittman South Branch (and Tool Lending Library): 1901 Russell Street
- West Branch: 1125 University Avenue

The public library nearest to the EIR Study Area is the Central Library, located one block west of the Campus Park. Services that the Berkeley Public Library offers to the community include access to books, magazines, and newspapers; free WiFi and computer access; meeting rooms and private study rooms; a Tool Lending Library for Berkeley residents and property owners; virtual book access; adult literacy programs; and community programs such as various cultural celebrations, film programs, and story times for children and families.³⁶ The Berkeley Public Library currently operates with 119.5 full-time-equivalent employees.³⁷ As of 2018, the number of registered borrowers with Berkeley Public Library was 110,100.³⁸

Oakland Public Library

The Oakland Public Library consists of a Downtown Oakland Main Library, 16 neighborhood branches, and 3 special-collection libraries:³⁹

- Main Library: 125 4th Street
- 81st Avenue Branch: 1021 81st Avenue
- African American Museum and Library at Oakland (Special Collection): 659 14th Street
- Asian Branch: 388 9th Street
- Brookfield Branch: 9255 Edes Avenue
- Cesar E. Chavez Branch: 3301 East 12th Street
- Dimond Branch: 3565 Fruitvale Avenue
- Eastmont Branch: 7200 Bancroft Avenue
- Elmhurst Branch: 1427 88th Avenue
- Golden Gate Branch: 5606 San Pablo Avenue
- Lakeview Branch: 550 El Embarcadero
- Martin Luther King, Jr. Branch: 6833 International Boulevard
- Melrose Branch: 4805 Foothill Boulevard

³⁵ Berkeley Public Library, 2014, Locations, www.berkeleypubliclibrary.org/locations, accessed July 24, 2020.

³⁶ Berkeley Public Library, Annual Report FY2018, https://www.berkeleypubliclibrary.org/sites/default/files/files/inline/annual_report_fy2018.pdf, accessed September 2, 2020.

³⁷ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 30, 2020.

³⁸ Berkeley Public Library, Annual Report FY2018, https://www.berkeleypubliclibrary.org/sites/default/files/files/inline/annual_report_fy2018.pdf, accessed September 2, 2020.

³⁹ Oakland Public Library, Locations and Hours, https://oaklandlibrary.org/using-library/locations-hours#block-views-locations-block_7, accessed September 2, 2020.

- Montclair Branch: 1687 Mountain Boulevard
- Piedmont Avenue Branch: 80 Echo Avenue
- Oakland History Center (Special Collection): 125 14th Street
- Oakland Tool Lending Library: 5205 Telegraph Avenue (free service to Oakland, Emeryville, and Piedmont residents and property owners)
- Rockridge Branch: 5366 College Avenue
- Temescal Branch: 5205 Telegraph Avenue
- West Oakland Branch: 1801 Adeline Street

Community services that the Oakland Public Library offers in addition to access to books include, but are not limited to, youth programs around poetry, science, technology, engineering, arts, and math; community workshops and cultural events; children's reading programs; bicycle repair stations; tool lending; adult literacy programs; and free WiFi and computer access.⁴⁰

5.13.4.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact related to libraries if:

1. In order to maintain acceptable service ratios or other performance objectives, the proposed project would result in the provision of or need for new or physically altered library facilities, the construction or operation of which could cause significant environmental impacts.
2. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.13.4.3 IMPACT DISCUSSION

PS-7	Implementation of the proposed project would not result in the need for new or physically altered library facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives.
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LRDP Update

Though the EIR Study Area includes property in both the cities of Berkeley and Oakland, future potential development under the proposed LRDP Update would primarily be in the city of Berkeley. Limited development in the city of Oakland potentially includes increased academic life space as well as necessary utility infrastructure upgrades. This type of development would not be anticipated to result in substantial population changes in Oakland that would use library services. In addition, as described in Chapter 5.12, Population and Housing, of this Draft EIR, the majority of the UC Berkeley population resides in the city of Berkeley, and anticipated population growth in Oakland would be negligible when compared to the overall

⁴⁰ Oakland Public Library, Annual Report 2018/2019, <https://oaklandlibrary.org/sites/default/files/uploads/2019%20Annual%20Report%20for%20download.pdf>, accessed September 2, 2020.

population growth anticipated in Oakland by the 2036–37 school year. Therefore, the proposed project is not anticipated to result in impacts to library services in Oakland.

With 24 libraries across campus, UC Berkeley provides substantial library services to the UC Berkeley population. Though the proposed LRDP Update anticipates an increased UC Berkeley population, which could potentially increase the number of guests that use services of the Berkeley Public Library, correspondence with City of Berkeley staff indicated that the proposed project would not result in the need for additional staff or resources for the Berkeley Public Library to accommodate demand.⁴¹

The Berkeley Public Library last performed a facility master plan in 2008 to assess the condition of its branch libraries and make recommendations for the future, which identified that significant renovations and/or replacement of branches were needed. By the end of 2014, the Berkeley Public Library had renovated the Claremont and North branches and replaced the West and South branches. In addition, the Central Library began renovations in 2018 to accommodate needed services, and renovations were scheduled to be completed in February 2021. Because of changes in the past several years, City of Berkeley staff has indicated that the Berkeley Public Library is sufficiently prepared to handle estimates of population growth in the city of Berkeley, including as associated with the proposed LRDP Update, and therefore impacts of the proposed project on library services would be *less than significant*.⁴²

Significance without Mitigation: Less than significant.

Housing Project #1

As described above, the proposed LRDP Update would not result in significant impacts to library services. Because Housing Project #1 falls under the proposed LRDP Update umbrella for increased residential and campus life square footage to serve the UC Berkeley population and would serve existing populations, it would not result in changes to existing demands on library services. In addition, residents of Housing Project #1 would be expected to use UC Berkeley libraries. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Similar to Housing Project #1, Housing Project #2 falls under the scope of the proposed LRDP Update and would provide residential, campus life, commercial, and open space for existing populations. It would not result in changes to existing demands on library services. In addition, residents of Housing Project #2 would be expected to use UC Berkeley libraries. Therefore, impacts would be *less than significant*.

⁴¹ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 30, 2020.

⁴² Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 30, 2020.

Significance without Mitigation: Less than significant.

PS-8	Implementation of the proposed project, in combination with past, present and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to libraries.
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LRDP Update

Implementation of the proposed project would result in cumulative impacts to library services if it, in combination with other past, present, or reasonably foreseeable projects, would result in the need for new or physically altered library facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives. The cumulative setting for public services includes development that would occur elsewhere throughout the city of Berkeley.

As discussed previously, the proposed project would not necessitate the Berkeley Public Library to alter existing or establish new library facilities to accommodate demand or otherwise fulfill performance objectives. In addition, due to the number of UC Berkeley libraries and volumes within them available, UC Berkeley already provides sufficient library services for the UC Berkeley population. City of Berkeley staff has indicated that Berkeley Public Library the proposed project would not result in the library needing to increase staff or resources, and that as a result of recent renovations, Berkeley Public Library is prepared to handle estimates of population growth in the city; therefore, cumulative impacts with respect to libraries would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. These impacts are incorporated into the analysis of the proposed LRDP Update under impact discussion PS-8.

Significance without Mitigation: Less than significant.

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5.14 PARKS AND RECREATION

This chapter describes the potential parks and recreation impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential parks and recreation impacts, and identifies feasible mitigation measures that could mitigate any potentially significant impacts.

Correspondence with public service agencies as part of the research and analysis of impacts on public services, including parks and recreation, is included in Appendix L, Public Services Data, of this draft environmental impact report (Draft EIR).

5.14.1 ENVIRONMENTAL SETTING

5.14.1.1 REGULATORY FRAMEWORK

University of California

Physical Design Framework

The 2009 UC Berkeley Physical Design Framework guides land use, landscape and open space, and architectural design for UC Berkeley. It acknowledges that UC Berkeley's open spaces provide an important resource for relaxation, recreation, and interaction. The Physical Design Framework's principles regarding landscape and open space as they pertain to parks and recreation include preserving natural areas and open spaces within the Campus Park for these purposes.

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing UC Berkeley buildings, infrastructure, grounds, and maintenance issues.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to parks and recreation as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP changes is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.14.3, Impact Discussion.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the Cities of Berkeley and Oakland related to parks and recreation that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

City of Berkeley General Plan

Policies in the Berkeley General Plan pertaining to parks and recreation are primarily contained in the 2001 Open Space (OS) and Recreation Element. Objectives of this element are to preserve, maintain, and repair the city's existing open space and recreational facilities; expand open space and recreational resources to meet evolving needs; and increase funding for parks, open space, and recreational facilities. Relevant parks and recreation-related policies from this element include:

- Policy OS-1: Preservation: Existing open space and parks shall be maintained and preserved for public park and open space use.
- Policy OS-4: Working with Other Agencies: Work with the Berkeley Unified School District, the University of California, the East Bay Municipal Utility District, and the East Bay Regional Park District to improve, preserve, maintain, and renovate their open space and recreation facilities.
- Policy OS-6: New Open Space and Recreational Resources: Create new open space and recreational resources throughout Berkeley.
 - Action C: Develop joint-use agreements with other agencies such as the University of California, the Berkeley Unified School District, the Bay Area Rapid Transit District, and regional open space agencies to increase public access to public lands.
- Policy OS-8: Community Gardens: Encourage and support community gardens as important open space resources that build communities and provide a local food source.
- Policy OS-10: Access Improvements: Improve transit, bicycle, disabled, and pedestrian access to and between open space and recreation facilities, including regional facilities such as the Berkeley Marina, University of California open space, East Bay Regional Park District lands, the Eastshore State Park, and recreational facilities in other cities.

In addition, the Land Use (LU) Element includes the following relevant policies:

- Policy LU-13: Basic Goods and Services: Ensure that neighborhoods are well served by commercial districts and community services and facilities, such as parks, schools, child-care facilities, and religious institutions.

- Policy LU-14: Community Service Centers: Work with the Berkeley Unified School District and the University of California to establish a network of community centers including school sites, neighborhood resource centers, and City facilities that offer community services such as childcare, health care, and recreational programs.

City of Oakland General Plan

The Oakland General Plan Open Space, Conservation, and Recreation (OSCAR) Element includes guidelines and policies for parks and recreation. The EIR Study Area includes land in the North Hills planning area identified in the OSCAR element. The North Hills planning area is described as having more parks than any of the city's other planning areas, and a large portion of these parks are passive recreation parks that were acquired to preserve environmentally sensitive land. This includes UC Berkeley's Hill Campus East zone.

Among the directives of the OSCAR element in the section about open space land uses is that retention of institutional open spaces will continue to be supported, and action programs include designation of most of UC Berkeley's landholdings as a resource conservation area.¹ As described under Objective OS-1, Resource Conservation Areas, of the OSCAR element, the purpose of resource conservation areas is to conserve and appropriately manage undeveloped areas in Oakland that have high natural resource value, scenic value, or natural hazards that preclude safe development. More than half of the city's park acreage consists of resource conservation areas.²

Policy OS-3.1, University, College, and Institutional Open Space, of the OSCAR element, is to retain open space at universities, colleges, and other institutions where such space provides recreational, aesthetic, conservation, or historic benefits to the community. Action OS-3.1.1, Conservation of UC Hill Property, under this policy is to work with UC Berkeley to include the portions of the campus designated for conservation in the LRDP after creating the new Resource Conservation Zone.³

5.14.1.2 EXISTING CONDITIONS

LRDP Update

University Parks and Recreation Resources

UC Berkeley provides a variety of active and passive recreational facilities for its students, staff, faculty, and visitors. This includes open spaces, gymnasiums, sports fields, and an aquatic complex. These resources are located throughout the Campus Park, the Hill Campus West, the Hill Campus East, the Clark Kerr Campus, and the City Environs Properties.

¹ City of Oakland, June 1996. Open Space, Conservation, and Recreation (OSCAR) Element, an Element of the Oakland General Plan, page xvii.

² City of Oakland, June 1996. Open Space, Conservation, and Recreation (OSCAR) Element, an Element of the Oakland General Plan, page 4-10.

³ The City of Oakland has, since writing this policy, designated Resource Conservation Areas (described in the policy as Resource Conservation Zones). The Hill Campus East is designated under the City of Oakland's land use designations as a Resource Conservation Area, as described in Chapter 5.10, Land Use and Planning, of this Draft EIR.

Open Space

As described in the project description, UC Berkeley's open spaces include natural and green spaces, such as glades, lawns, and riparian areas along Strawberry Creek, as well as sidewalks, paths, and plazas, which provide for passive recreational use. Currently, UC Berkeley has approximately 187 acres of open space throughout the EIR Study Area, excluding informal recreational space in the Hill Campus East, such as fire roads that are also used as hiking trails. UC Berkeley also has rooftop gardens, which are not included in these numbers, but further increase UC Berkeley's total open space area.

The UC Berkeley's primary open spaces are listed as follows by LRDP zone:

Campus Park:

- Arts Quad (bounded by Hargrove, Hertz, Bauer Wurster, Kroeber)
- CNR Quad
- Campanile Esplanade
- College Ave. Quad
- Crescent/Springer Gateway (Crescent Lawn)
- Dwinelle/Wheeler Plaza
- Faculty Glade
- Founders Rock
- Goodspeed Natural Area
- Grinnell Natural Area & Eucalyptus Grove
- Hearst Mining Circle
- Haas School of Business courtyard
- Memorial Glade
- Observatory Hill
- Spieker Plaza
- Strawberry Creek
- Upper and Lower Sproul Plaza
- West Oval
- West Plaza
- Wickson Natural Area

Hill Campus East:

- Botanical Garden
- Hill Campus East natural areas, including Upper and Lower Jordan Fire trails

Clark Kerr Campus:

- Clark Kerr Grand Court
- Clark Kerr Gingko Court

UC Berkeley's secondary open spaces include the following:

Campus Park:

- Barker Quad
- Chancellor's Esplanade
- Chemistry Plaza
- University House Garden
- Building courtyards, including Hearst Field Annex courtyard and Ishi Court in Dwinelle Hall

City Environs:

- Berkeley Way West Plaza
- Building courtyards at residence halls, including Unit 1 and Unit 2
- People's Park

Hill Campus West:

- Charter Hill

Formal Athletics and Recreational Facilities

UC Berkeley also has roughly 50 acres of formal athletics and recreational space within the EIR Study Area, which includes approximately 27 acres of established athletics fields and outdoor areas combined with approximately 975,000 gross square feet of indoor facilities. These facilities are listed as follows by LRDP zone:

Campus Park:

- Edwards Track Stadium/Goldman Field (soccer, track, and field)
- Evans Diamond (baseball field)
- Haas Pavilion (basketball, gymnastics, and volleyball arena)
- Hearst Memorial Gymnasium (physical education gymnasium and pools)
- North Field (physical education, military science, unscheduled rec)
- Hearst Tennis Courts
- Hellman Tennis Center
- Recreational Sports Facility and Kleeberger Fieldhouse (gymnasium with facilities for basketball, volleyball, handball, squash and racquetball courts, martial arts, weight and workout rooms, fitness center, aerobics and dance classes; available for use by students, staff, faculty, and the public)
- Spieker Aquatics Complex
- Van Heut Training Center

Hill Campus West:

- California Memorial Stadium (football stadium)
- Haas Clubhouse
- Maxwell Family Field (field hockey and lacrosse)
- Rock Climbing Facility
- Softball Field
- Strawberry Canyon Recreation Center and Pool
- Student Athlete High Performance Center
- Witter Rugby Field

Clark Kerr Campus:

- Clark Kerr Sand Volleyball Courts
- Clark Kerr Track and Soccer Field
- Golden Bear Softball Field
- Golden Bear Recreation Center and Pool
- Golden Bear Tennis Courts and Basketball Courts

City Environs Properties:

- Channing Tennis Courts
- Legends Aquatic Center
- Underhill Field (field hockey)
- Upper Hearst Field (inactive)

Other Local Parks and Recreation Resources

Berkeley Parks and Recreation

Based on communication with City staff, the State of California Parks Department sets a standard of two acres of parkland per 1,000 people, and the City of Berkeley provides approximately two acres of parkland per 1,000 residents.⁴ The City of Berkeley maintains approximately 250 acres across 52 parks. In addition, it

⁴ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 30, 2020.

maintains 15 athletic fields, 49 sports courts, 4 community centers, 2 clubhouses, 29 restroom and outbuildings, 2 swimming pools, and 3 resident camps as well as the largest public marina in the Bay Area.⁵ With UC Berkeley's central location in the city, many of the City's parks are within about a mile of the Campus Park. The City of Berkeley Adopted Biennial Budget for Fiscal Years 2020 and 2021 provides for 155 full-time-equivalent employees for Parks, Recreation, and Waterfront.⁶

Oakland Parks and Recreation

Based on the City of Oakland General Plan, as of 1996, the City of Oakland had a citywide ratio of 8.26 acres of parkland per 1,000 residents, with a local-serving park acreage ratio of 1.33 acres per capita (2.35 acres per 1,000 residents for the North Hills planning area, in which parts of the EIR Study Area are located). The City of Oakland General Plan proposes a citywide park acreage standard goal of 10 acres per 1,000 residents and a local-serving park acreage standard of 4 acres per 1,000 residents.⁷ The City of Oakland has over 130 parks and public grounds; 25 recreation, community and interpretive centers; and 52 multiuse fields.⁸

East Bay Regional Parks District

The East Bay Regional Park District (EBRPD) is a system of parklands throughout Alameda and Contra Costa Counties, comprised of 125,000 acres, 73 parks, and over 1,250 miles of trails.⁹ EBRPD parklands adjacent to the EIR Study Area include Tilden Regional Park located north of the Hill Campus East across Grizzly Peak Boulevard and Claremont Canyon Regional Preserve immediately south of the Hill Campus East and east of the Clark Kerr Campus.

Housing Project #1

The Housing Project #1 project site does not currently include any parks or recreational facilities. The nearest UC Berkeley-related park, open space, or recreational resources are those along the western side of the Campus Park within 0.25 miles of the project site, including the Crescent Lawn, Eucalyptus Grove, Hellman Tennis Center, Edwards Stadium, and Evans Diamond. Nearby non-UC Berkeley recreational facilities include Ohlone Park, which has a softball field, multipurpose turf, basketball court, lawn volleyball space, play areas, picnic areas, dog park, and community garden, located 0.2 miles northwest of the project

⁵ City of Berkeley, 2017, City of Berkeley Fiscal Years 2018 & 2019 Proposed Capital Improvement Program, Parks, Recreation, and Waterfront, page 36, <https://www.cityofberkeley.info/uploadedFiles/Manager/Budget/FY%202018%20FY%202019%20Proposed%20CIP%20Budget%20Book.pdf>, accessed August 24, 2020.

⁶ City of Berkeley, City of Berkeley Fiscal Years 2020 and 2021 Adopted Biennial Budget, www.cityofberkeley.info/uploadedFiles/Manager/Budget/FY-2020-2021-Adopted-Budget-Book.pdf, accessed July 24, 2020.

⁷ City of Oakland, 1996, Open Space, Conservation, and Recreation (OSCAR) Element, an Element of the Oakland General Plan, pages 4-9 through 4-12.

⁸ City of Oakland, 2020, Park and Landscape Maintenance, <https://www.oaklandca.gov/topics/park-and-landscape-maintenance#:~:text=Over%20130%20City%20parks%20and,recreation%2C%20community%20and%20interpretive%20centerss>, accessed August 18, 2020.

⁹ East Bay Regional Parks District, 2018, About Us. <https://www.ebparks.org/about/default.htm>, accessed January 28, 2021.

site; and Martin Luther King Jr. Civic Center Park, which includes a lawn and staging area, located 0.3 miles southwest of the project site.

Housing Project #2

As described in Chapter 3, Project Description, of this Draft EIR, the 2.8-acre (122,000-square-foot) project site is a rectangular parcel in an urbanized area that has for the last several decades been used as an informal park. It is owned and maintained by UC Berkeley. Current on-site resources and facilities include community gardens, lawn space, a basketball court, a picnic area, a stage, and public restrooms. Nearby UC Berkeley-related park and recreational facilities include Underhill Field 300 feet to the northeast and recreational facilities at the Clark Kerr Campus, located 0.5 miles to the east. In addition, a large number of the Campus Park recreational facilities are along the southern edge of the Campus Park, within 0.5 miles of People's Park. These include Edwards Stadium, Evans Diamond, Haas Pavilion, Hearst Gymnasium, Hearst North Field, the Recreational Sports Facility, and Spieker Aquatics Complex.

Nearby non-UC Berkeley parks and recreational resources include Willard Park, which features tennis courts, a children's play structure, picnic area, and multipurpose green, located 0.25 miles to the south; the EBRPD's Claremont Canyon Regional Preserve with hiking trails, located 0.7 miles to the east; and Tim Moellering Field, a multiuse sports field used by schools and community sports groups, located 0.7 miles to the southwest.

5.14.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant parks and recreation impact if it would:

1. Result in substantial adverse physical impacts associated with the provision of new or physically altered parks facilities, need for new or physically altered parks facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for parks services.
2. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
3. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.
4. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.14.3 IMPACT DISCUSSION

REC-1	The proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered parks facilities, need for new or physically altered parks facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for parks services.
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LRDP Update

UC Berkeley currently has approximately 187 acres of open space and 50 acres of formal athletic and recreational space, for a total of 237 acres of recreational space. As described in Chapter 3, Project Description, needed spaces include a new basketball practice and gymnastics facility and hub to support sports in the western area of the Campus Park. In addition, expanded fitness, gym, wellness facilities, and outdoor field space are needed.

The environmental impacts associated with the construction of the parks and recreational facilities anticipated under the proposed LRDP Update are evaluated throughout this EIR at the program-level. The proposed LRDP Update could result in construction-level impacts as described in Chapter 5.2, Air Quality; Chapter 5.3, Biological Resources; Chapter 5.4, Cultural Resources; Chapter 5.6, Geology and Soils; Chapter 5.11, Noise; Chapter 5.16, Tribal Cultural Resources; and Chapter 5.18, Wildfire. Any potential future parks or recreation facilities constructed would be subject to the CBPs and mitigation measures described in this Draft EIR to ensure the impacts from the project-level construction would be less than significant or reduced to the maximum extent feasible.

The analysis herein focuses on whether the population increase projected for the proposed LRDP Update would increase demands for parks and recreational facilities such that the construction of additional facilities (apart from those analyzed as part of the proposed project) would be required.

The proposed LRDP Update would result in approximately one acre of open space and three acres of formal athletic and recreational space. These include changes to recreational space throughout the EIR Study Area, excluding the Hill Campus East, and thus are primarily in the city of Berkeley. Because the proposed LRDP Update is not anticipated to result in major changes to the EIR Study Area in Oakland—except for up to 175,000 square feet of increased academic life space and utility infrastructure improvements, including potential photovoltaic solar installation—and particularly since the Hill Campus East will primarily be maintained as a natural area in line with City of Oakland OSCAR policies, the proposed project is not anticipated to result in impacts to city of Oakland parks and recreational services. Furthermore, residents in the region have additional access to parks and recreational space through parks in Alameda and Contra Costa counties maintained by EBRPD.

Demand for parks and recreational facilities could increase as a result of the increased UC Berkeley population that is projected in the proposed LRDP Update. As described previously, the City of Berkeley maintains a park acreage standard of two acres per 1,000 residents, which it meets but does not exceed. As

described in Chapter 5.12, Population and Housing, overall population growth under the proposed LRDP Update would be a combination of the direct growth resulting from the construction of new housing (which would result in a total of up to 13,902 new Berkeley residents by 2037) and indirect growth from unaccommodated students and faculty/staff seeking housing in the city (estimated 2,291 people). Therefore, the proposed LRDP Update could add 16,193 people to the Berkeley population (13,902 direct population growth + 2,291 indirect population growth). According to correspondence with the City of Berkeley, the increased UC Berkeley population of faculty/staff and students added to the city's population would require an additional two acres of parks/recreational space for every 1,000 new residents in order for the City of Berkeley to maintain its service ratio. City of Berkeley staff identified that it experiences existing deficiencies in staffing and/or facilities and equipment, but that it does not have existing plans for expansion or relocation of services that would serve the proposed project.¹⁰

UC Berkeley's parks and recreational spaces, because they are not City of Berkeley properties or maintained by the City of Berkeley, are not included in the City of Berkeley's park acreage estimates. These resources provide parks and recreational uses for the UC Berkeley population and are largely available for public use as well. Neither the UC nor UC Berkeley has a service ratio for recreational facilities, but by applying the City of Berkeley standard of two acres per 1,000 residents, UC Berkeley's 237 acres of recreational space for its current population of 55,129 students, staff, and faculty translates to approximately 4.3 acres per 1,000 people for the UC Berkeley population. Under the proposed LRDP Update, UC Berkeley would have approximately 241 acres of recreational space for an estimated population of 67,200 by the buildout horizon year of 2036–37, that is, 3.6 acres per 1,000 UC Berkeley population. This provides more than enough recreational space by the City of Berkeley's standards and would continue to do so under the proposed project. In addition, a substantial number of UC Berkeley's students and faculty/staff residing in Berkeley are expected to largely use UC Berkeley facilities due to proximity and convenience. Likewise, it is anticipated that residents of Berkeley would also continue to use UC Berkeley's open spaces, including natural and green spaces such as glades, lawns, and riparian areas along Strawberry Creek; Upper and Lower Jordan fire trails and the East-West fire trail in the Hill Campus East zone for recreational use and dog walking; sidewalks, paths, and plazas, which provide for passive recreational use; and other recreational uses that are open to the public, and the proposed project would not exacerbate the city's existing parkland deficiencies.

Because UC Berkeley's park and recreational facilities would be expected to absorb the additional demand from its population for parks and recreational facilities, implementation of the proposed project is not anticipated to create a need for new or altered parks. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

¹⁰ Klein, Jordan. Interim Director, Department of Planning & Development, City of Berkeley. Personal email communication with PlaceWorks. October 30, 2020.

Housing Project #1

Housing Project #1 would not remove any existing parks or recreational space. In addition to housing and commercial uses, it would include a fitness center on Floor 2; open space in the form of a central courtyard on Floor 2; porches or balconies on Floors 2, 4, 7, 10, and 13; and a rooftop vegetable garden. As described in Chapter 3, Project Description, the fitness center and open space components would serve residents of the building. In addition, parks and recreation demand from residents and/or employees of Housing Project #1 would be absorbed by UC Berkeley's recreational facilities throughout the EIR Study Area, as discussed for the proposed LRDP Update. Finally, Housing Project #1 is close to the Campus Park, with easy access to the recreational facilities that UC Berkeley offers.

Since Housing Project #1 would provide recreational facilities for its residents, and parks and recreation demand from residents and/or employees of Housing Project #1 would be absorbed by UC Berkeley's recreational facilities throughout the EIR Study Area, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered parks facilities or the need for new or physically altered parks facilities in order to maintain acceptable service ratios or performance objectives. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Housing Project #2 would build student and affordable and supportive housing on a 2.8-acre site that has for the last several decades been used as an informal park. Though the total recreational space on-site would be reduced to accommodate the proposed student and affordable and supportive housing buildings, approximately two-thirds of the site would remain open space. In addition, the student housing component would include recreational facilities for residents, including fitness and yoga studios. Parks and recreation demand would also be absorbed by UC Berkeley's recreational facilities throughout the EIR Study Area. Finally, Housing Project #2 is close to the Campus Park, providing easy access to the recreational facilities that UC Berkeley offers.

Since Housing Project #2 would provide recreational facilities for its residents and continue to provide open space for the public, and additional demands generated by residents and/or employees of Housing Project #2 would be absorbed by UC Berkeley's recreational facilities throughout the EIR Study Area, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered parks facilities or the need for new or physically altered parks facilities in order to maintain acceptable service ratios or performance objectives. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

REC-2	The proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
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LRDP Update

As described under impact discussion REC-1, the proposed LRDP Update would accommodate an increased UC Berkeley population, and UC Berkeley facilities are anticipated to be able to absorb parks and recreational demands to offset potential effects on City of Berkeley standard service ratios.

As described under Chapter 3, Project Description, the proposed LRDP Update is intended to address the need for preservation, enhancement, and/or replacement of recreation and athletic field space by planning for increased campus life spaces. In addition, the proposed LRDP Update envisions that the substantial amount of open space provided in the Hill Campus East would remain primarily as open space and managed for climate resiliency. The proposed LRDP Update plans for expanded fitness, gym, and wellness facilities and outdoor field space.

The proposed LRDP Update includes several objectives that maintain and enhance existing park and recreational space on the UC Berkeley campus. The proposed LRDP Update includes the following objectives in its Land Use, Landscape and Open Space, and Collaborative Planning elements:

- Maintain and enhance the image and experience of the Campus Park as a welcoming and inclusive environment. Enhance key gateways and wayfinding, and reinforce and expand areas that facilitate interaction, recreation, and research in the outdoor environment.
- Maintain, improve, and expand indoor and outdoor athletics and recreation facilities and open space resources on the Clark Kerr Campus as amenities for the campus community, and to provide broader community access where capacity is available.
- Continue to provide access to open space and natural areas in the Campus Park as an informal recreational resource for the City of Berkeley community.
- Support community health and wellness by providing community access to campus open spaces, pedestrian and bicycle pathways, natural environments, and recreation facilities.

As a result of the plans and objectives above, the proposed project would not increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration would occur or be accelerated, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Housing Project #1, as discussed under impact discussion REC-1, would include on-site recreational facilities and open space. In addition, the project's residents and employees are expected to use UC Berkeley's recreational facilities due to the proximity to the Campus Park and UC Berkeley's recreational facilities throughout the EIR Study Area. Because of the variety and proximity of UC Berkeley facilities, increased

demand is not expected to be concentrated on any single recreational facility such that usage from the project's population would lead to the deterioration of recreational facilities. Therefore, Housing Project #1 would not increase the use of existing parks and recreational facilities such that substantial physical deterioration would occur or be accelerated, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Housing Project #2 would provide on-site recreational amenities and open space to serve the project's residential and employee population as well as the public. As described above for Housing Project #1, the population of Housing Project #2 is expected to use UC Berkeley's recreational facilities throughout the EIR Study Area due to their proximity and variety, and the project's population would not be expected to cause the deterioration of individual recreational facilities. Therefore, Housing Project #2 would not increase the use of existing parks or recreational facilities to the extent that substantial physical deterioration would occur or be accelerated, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

REC-3	The proposed project would include recreational facilities but would not result in significant impacts associated with the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.
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LRDP Update

The proposed LRDP Update would include an increase in campus life facilities, including recreational facilities, to address existing needs. As described in Chapter 3, Project Description, needed spaces include a new basketball practice and gymnastics facility and hub to support sports in the western area of the Campus Park; expanded fitness, gym, and wellness facilities; and outdoor field space. UC Berkeley has identified potential projects to meet these needs, as shown in Table 3-2, Potential Areas of New Development and Redevelopment, including, but not limited to, the North Field, Edwards Stadium, and Recreational Sports Facility Addition East and West projects, and other projects that may accommodate campus life uses. As described in impact discussion REC-1, the environmental impacts associated with the construction of the parks and recreational facilities anticipated under the proposed LRDP Update are evaluated throughout this EIR at the program level and subject to the CBPs and mitigation measures described in this EIR. However, depending on the type, size, and location of new parks and recreational facilities, the construction of new parks would be subject to project approval in accordance with UC Berkeley procedures, as required, and the CBPs and mitigation measures described in this EIR, to ensure the impacts from the construction of parks and recreational facilities would be mitigated to the extent feasible. Therefore, the impact is considered *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

As described under impact discussion REC-1, Housing Project #1 and #2 would include the incorporation of campus life facilities, including recreational facilities for future residents, and Housing Project #2 would include public open space. Like the proposed LRDP Update, the potential environmental impacts associated with this construction are evaluated throughout this EIR in Chapters 5.1, Aesthetics, through 5.18, Wildfire. Neither project requires the construction or expansion of recreational facilities beyond what is evaluated in this EIR and which might have an adverse physical effect on the environment. Accordingly, impacts are *less than significant*.

Significance without Mitigation: Less than significant.

REC-4	The proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to parks and recreation.
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LRDP Update

As described previously, the City of Berkeley has indicated that there are existing deficiencies to staffing and/or facilities and equipment but has no plans for expansion or relocation of services. Cumulative development in the city of Berkeley could increase demand for parks and recreational facilities, exacerbating these existing issues. However, other new development within the city of Berkeley subject to local policies would be required to comply with City of Berkeley policies, as well as pay fees to mitigate for increased park demands in accordance with the Quimby Act (California Government Code Section 66477), in order to reduce impacts to parks and recreation. As described under impact discussions REC-1 and REC-2, the proposed LRDP Update would not result in substantial adverse physical impacts associated with the creation of or demand for parks facilities in order to maintain acceptable service ratios, response times, or other performance objectives for parks services, nor would it increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. This is because the proposed LRDP Update includes improvements to UC Berkeley recreational and open space and provides sufficient space for current and future UC Berkeley populations based on the population projections for the 2036–37 academic year. Because demands for park and recreational facilities would largely be absorbed by UC Berkeley facilities, the LRDP Update would not substantially contribute to cumulative demands. Accordingly, cumulative impacts are *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. These impacts are incorporated into the cumulative impact analysis of the proposed LRDP Update.

Significance without Mitigation: Less than significant.

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5.15 TRANSPORTATION

This chapter describes the potential transportation impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential transportation impacts, and identifies UC Berkeley’s continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts.

Transportation data compiled for this analysis is included as Appendix M, Transportation Data, of this draft environmental impact report (Draft EIR).

5.15.1 ENVIRONMENTAL SETTING

5.15.1.1 REGULATORY FRAMEWORK

State

California Environmental Quality Act

CEQA generally requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts to the extent feasible. The CEQA Guidelines Section 15064.3 describes specific considerations for determining a project’s transportation impacts. Generally, vehicle miles traveled (VMT) is the most appropriate measure of transportation impacts. For the purposes of this section, VMT refers to the total distances of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and nonmotorized travel. The legislative action that led to the July 1, 2020, changes to CEQA was California Senate Bill (SB) 743.

California Senate Bill 743

On September 27, 2013, SB 743 was signed into law, building on legislative changes from SB 375, Assembly Bill (AB) 32, and AB 1358. SB 743 began the process to modify how impacts to the transportation system are assessed for purposes of CEQA compliance. SB 743 created a shift in transportation impact analysis under CEQA from a focus on automobile delay, as measured by level of service and similar metrics, to a focus on reducing VMT.

SB 743 also includes amendments that revise the definition of “infill opportunity zones” to allow cities and counties to opt out of traditional level-of-service standards established by congestion management agencies and requires the Governor’s Office of Planning and Research (OPR) to update the State CEQA Guidelines and establish criteria for determining the significance of transportation impacts. The statute states that upon certification of the new criteria, automobile delay, as described solely by level of service or

similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment under CEQA, except in certain locations specifically identified in the new criteria.

The new criteria in the CEQA Guidelines Section 15064.3 were certified and adopted in December 2018. Section 15064.3 states that VMT is the most appropriate metric to assess transportation impacts and that, with limited exceptions, a project's effect on automobile delay does not constitute a significant environmental impact. These provisions applied statewide effective July 1, 2020.

In addition to updating the CEQA Guidelines, OPR prepared additional technical guidance in Technical Advisory on Evaluating Transportation Impacts in CEQA.¹ The Technical Advisory provides background on the intent of SB 743, technical considerations in the selection of VMT metrics, methodology, and significance thresholds, criteria which could be used to screen projects out from a VMT impact analysis, and information on VMT mitigation.

California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining the State Highway System (SHS). Federal highway standards are implemented in California by Caltrans. Any improvements or modifications to the SHS within the EIR Study Area would need to be approved by Caltrans. In the EIR Study Area, Caltrans's facilities include Highway 13 (Ashby Avenue/Tunnel Road), Highway 123 (San Pablo Avenue), State Route 24, and Interstate 580/80.

On May 20, 2020, Caltrans adopted the Transportation Impact Study Guide (TISG) to provide updated guidance to Caltrans Districts, lead agencies, tribal governments, developers, and consultants based on changes to Caltrans' review process for transportation analysis of land use projects and plans under the updated CEQA Guidelines. This guidance is not binding and is intended to be used as a reference and informational document. It may be updated based on need or in response to updates of the OPR's Technical Advisory. The TISG replaces the Caltrans 2002 Guide for the Preparation of Traffic Impact Studies and does not apply to transportation projects on the SHS. The TISG does not prescribe VMT calculation methodologies, metrics, or significance criteria but provides guidance based primarily on the OPR Technical Advisory.

University of California

University of California Sustainable Practices Policy

The University of California (UC) Sustainable Practices Policy lays out sustainability goals and strategies for all UC system campuses and medical centers and covers climate and energy, transportation, water, green building, waste, food, and operations. The UC has a goal to reach operational carbon neutrality by 2025 for Scope 1 and Scope 2 emissions. As a part of that goal, the UC recognizes that single-occupant-vehicle (SOV)

¹ *Technical Advisory on Evaluating Transportation Impacts in CEQA*. (2018). Sacramento, CA: Governor's Office of Planning and Research, California.

commuting is a primary contributor to commute GHG emissions and localized transportation impacts, and has set the following goals related to transportation:

- By 2025, each location shall strive to reduce its percentage of employees and students commuting by SOV by 10 percent relative to its 2015 SOV commute rates.
- By 2050, each location shall strive to have no more 40 percent of its employees and no more than 30 percent of all employees and students commuting to the location by SOV.
- Each location (university) will develop a business-case analysis for any proposed parking structures serving University affiliates or visitors to campus to document how a capital investment in parking aligns with each university's Climate Action Plans and/or sustainable transportation policies.

University of California Facilities Manual

The UC updated its Facilities Manual² that applies to all campuses and contains UC policies, procedures, and guidelines for its facilities. The Facilities Manual states that UC is the “authority having jurisdiction” for matters of code regulations on projects on UC campuses.

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues. Key sections of the Campus Design Standards relevant to transportation include bicycle infrastructure and standards for bus stops.

UC Berkeley Sustainability Plan

UC Berkeley created the Sustainability Plan to provide more detail on goals and strategies that will be implemented to meet the UC Sustainable Practices Policy. The UC Berkeley Sustainability Plan includes the following goal, which exceeds the UC Sustainable Practices Policy:

- Reduce employee drive alone rate to 36% by 2025.

The UC Berkeley Sustainability Plan provides the following key strategies to meet this goal:

- Expand and market a comprehensive environmentally sustainable, safe, accessible, and equitable multi-modal transportation program to reduce parking demand and carbon emissions and increase sustainable commute and intra-campus travel.
- Support campus housing initiative that includes new student and other campus housing within walking distance and transit to campus.
- Update the Campus Bicycle Plan.

² University of California, Office of the President, *Facilities Manual*, <https://www.ucop.edu/construction-services/facilities-manual/>.

- Participate in efforts to evaluate expansion of telework options for employees.
- Promote AC Transit route planning, services, and amenities to increase campus ridership.
- Support continuing activities to strengthen active transportation options.
- Implement strategies identified in the new campus Long Range Development Plan/Environmental Impact Report and Campus Master Plan (expected 2021).

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to transportation as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.15.3, Impact Discussion.

Regional

Plan Bay Area 2040

Plan Bay Area acts as both the Bay Area's Regional Transportation Plan, as well as its Sustainable Communities Strategy. Plan Bay Area grew out of the California Sustainable Communities and Climate Protection Act of 2008, which requires each of the state's 18 metropolitan areas to reduce greenhouse gas emissions from cars and light trucks.³

In Plan Bay Area, the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments found that the Bay Area consistently ranks as one of the most congested metropolitan areas in the nation. Plan Bay Area concluded, however, that additional roadway capacity would not solve the problem and that the region must instead find ways to operate the existing highway and transit networks more efficiently.

To that end, Plan Bay Area recommends increasing nonauto travel mode share and reducing VMT per capita and per employee by promoting transit-oriented development, transit improvements, and active transportation modes such as walking and bicycling. These strategies seek to not only improve mobility in the region, but also reduce regional and statewide GHG emissions.

Alameda County Transportation Commission Congestion Management Program

The Alameda County Transportation Commission (CTC) is a joint powers authority that plans, funds, and delivers transportation programs and projects that expand access and improve mobility to foster a vibrant and livable Alameda County. Alameda CTC also serves as the county's congestion management agency. The Alameda CTC administers a land use analysis program, which is one of the legislatively required elements of the Alameda CTC Congestion Management Program. The goals of the land use analysis program are to:

³ Metropolitan Transportation Commission, Association of Bay Area Governments, 2017, *Plan Bay Area 2040*.

- Better integrate local land use and regional transportation investment decisions.
- Better assess the impacts of development in one community on another community.
- Promote information sharing between local governments when the decisions made by one jurisdiction will impact another.

Alameda CTC reviews local land use plans and projects with the potential to cause countywide or regional-scale impacts, including specific plans. The purpose of the Alameda CTC's review is to assess impacts of individual development actions on the regional transportation system and to ensure that significant impacts are appropriately mitigated.

Alameda CTC guidelines state that impacts to all modes should be considered:

- **Transit:** Effects of vehicle traffic on mixed-flow transit operations, transit capacity, transit access/egress, need for future transit service, consistency with adopted plans and circulation element needs.
- **Bicycles:** Effects of vehicle traffic on bicyclist conditions, site development and roadway improvements, and consistency with adopted plans.
- **Pedestrians:** Effects of vehicle traffic on pedestrian conditions, site development and roadway improvements, and consistency with adopted plans.
- **Other impacts and opportunities:** Noise impacts for projects near State highway facilities and opportunities to environmentally clear access improvements for transit-oriented development projects.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the City of Berkeley related to transportation that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

City of Berkeley VMT Criteria, Screening, and Thresholds

As noted, SB 743 initiated a process intended to fundamentally change transportation impact analysis under CEQA. Most significantly, the legislation eliminated automobile delay, level of service, and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts. Recent amendments and additions to the CEQA Guidelines (in particular, new Section 15064.3) have eliminated auto delay for CEQA purposes and identified VMT as a required CEQA transportation metric.

To conform to the requirements of SB 743, the City of Berkeley developed VMT methodology, metrics, and significance criteria. They are summarized in City of Berkeley VMT Criteria and Thresholds (June 29, 2020).⁴ This document, which was adopted by the Berkeley City Council on November 19, 2020, provides background information about the legal requirements and describes the VMT methods and thresholds—generally consistent with the OPR Technical Advisory—that the City of Berkeley will incorporate into its environmental review process for the evaluation of land use projects. The VMT metrics, screening criteria, and thresholds of significance recommended for evaluation of project VMT in the city of Berkeley are described below.

VMT Metrics: For the purposes of VMT analysis in Berkeley, the City will use the metrics of household VMT per capita (which apply to residential uses) and home-work VMT per worker (which apply to employment-generating uses). These VMT metrics are consistent with the OPR Technical Advisory and are the metrics that the Alameda CTC Countywide Travel Demand Model directly produces. The household VMT per capita measures all of the trips by motor vehicle associated with a residential use and divides that distance by the number of residents in the EIR Study Area. The home-work VMT per worker measures all of the commute trips by motor vehicle between homes and workplaces and divides that distance by the number of workers in the EIR Study Area.

VMT Screening Criteria: The City of Berkeley acknowledges several project types or characteristics that may allow a project's impact to be considered less than significant with respect to VMT generation without conducting a detailed analysis. The screening criteria applicable to the proposed LRDP Update, Housing Project #1, and Housing Project #2 include the following:

- **Transit Priority Areas:** Projects located within a one-half mile walkshed around major transit stops⁵ (i.e., the BART stations and the Amtrak station) or within a one-quarter mile walkshed around high-quality transit corridors.⁶ The screening for a transit priority area would not apply if the project had any of the following characteristics:
 - Has a floor area ratio of less than 0.75 for office uses.
 - Includes more than 200,000 square feet of office or commercial space.
 - Includes more parking supply than the project's estimated demand.
 - Is inconsistent with the City's general plan, an applicable specific plan, or an applicable sustainable communities strategy (as determined by the City with input from MTC).
 - Replaces affordable residential units with market-rate residential units.
 - Has project-specific or location-specific information that indicates that the project will generate significant levels of VMT.

⁴ *City of Berkeley VMT Criteria and Thresholds*. (June 29, 2020.) Berkeley, CA: City of Berkeley.

⁵ "Major transit stop" is defined in Public Resources Code 21064.3 as a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

⁶ "High-quality transit corridor" is defined in Public Resources Code 21155 as a corridor with fixed-route bus service with service intervals no longer than 15 minutes during peak commute hours. For purposes of this section, the service intervals must be no longer than 15 minutes during peak commute times for at least one individual transit route.

- **Projects in Low VMT Areas:** Projects that are located in low-VMT areas and that have characteristics similar to other uses already located in those areas can be presumed to generate VMT at similar rates. The low-VMT areas in Berkeley are defined based on the results of the Alameda CTC model:
 - Residential projects will be screened out if located in an area that has household VMT per capita that is 15 percent lower than the baseline regional average.
 - Office and industrial projects will be screened out if located in an area that has home-work VMT per worker that is 15 percent lower than the baseline regional average.
- **VMT Significance Thresholds:** The City of Berkeley relies on the evidence and data presented by OPR in its recommendations for VMT thresholds, and applies the following significance thresholds in Berkeley:
 - A residential project's VMT impact is considered less than significant if its household VMT per capita is at least 15 percent below the regional average household VMT per capita.
 - An employment-generating project's VMT impact is considered less than significant if its home-work VMT per worker is at least 15 percent below the regional average home-work VMT per worker.

City of Berkeley General Plan

The City of Berkeley General Plan Transportation Element contains maps of the citywide transit network, vehicular circulation network, bicycle circulation network, and emergency access and evacuation network. It also contains 53 policies to achieve the following six objectives:

1. Maintain and improve public transportation services throughout the city.
2. Reduce automobile use and VMT in Berkeley, and the related impacts by providing and advocating for transportation alternatives and subsidies that facilitate voluntary decisions to drive less.
3. Improve quality of life in Berkeley neighborhoods by calming and slowing traffic on all residential streets.
4. Maintain and improve the existing infrastructure and facilities for the movement of people, goods, and vehicles within and through the city.
5. Improve management of public parking to better serve needs of residents, businesses, and visitors.
6. Create a model bicycle- and pedestrian-friendly city where bicycling and walking are safe, attractive, easy, and convenient forms of transportation and recreation for people of all ages and abilities.

Virtually all the City of Berkeley's transportation policies have a bearing on UC Berkeley faculty, staff, students, and visitors, due to UC Berkeley's central location within the city. However, policies listed after this paragraph directly address issues related to UC Berkeley transportation planning. In addition, Policy T-18 directs the City, when considering transportation impacts under CEQA, to evaluate how a plan or project affects all modes of transportation, including transit riders, bicyclists, pedestrians, and motorists, to determine the transportation impacts of a plan or project. The policy includes an action to develop a multimodal level of service to facilitate these evaluations, but the City has not yet developed this tool.

- **Policy T-13: Major Public Institutions.** Work with other agencies and institutions, such as the University of California, the Berkeley Unified School District, Lawrence Berkeley Laboratory, Vista Community College, the Alameda County Court, and neighboring cities to promote Eco-Pass and to pursue other efforts to reduce automobile trips. (Also see Land Use Policy LU-39.)

- **Policy T-16: Access by Proximity.** Improve access by increasing proximity of residents to services, goods, and employment centers. (Also see Land Use Policies LU-13 and LU-23, Housing Policy H-16, and Environmental Management Policy EM-41 Action B.)
- **Policy T-17: Transportation Planning.** Involve residents, businesses, and institutions in all stages of transportation planning. (Also see Citizen Participation Policies CP-1 through CP-5 and CP-8 through CP-10.)
- **Policy T-18: Transportation Impact Analysis and Vehicle Miles Traveled (Policy adopted by the City of Berkeley City Council on November 19, 2020 to replace the previous Level of Service policy).** When considering transportation impacts under the California Environmental Quality Act, the City shall consider how a plan or project affects all modes of transportation, including transit riders, bicyclists, pedestrians, and motorists, to determine the transportation impacts of a plan or project. Plans and projects shall be designed to deliver significant benefits to travel by pedestrians, bicycle, or transit, and/or reduced impacts on air quality, greenhouse gas emissions, and safety. For the purposes of CEQA, Vehicle Miles Traveled (VMT) shall be the metric used to analyze the transportation impacts of a plan or project.
- **Policy T-28: Emergency Access.** Provide for emergency access to all parts of the city and safe evacuation routes. (Also See Disaster Preparedness and Safety Policy S-22.)
- **Policy T-37: University of California and Large Employer Parking.** Encourage large employers, such as the University of California and Berkeley Unified School District, to allocate existing employee parking on the basis of a) need for a vehicle on the job, b) number of passengers carried, c) disability, and d) lack of alternative public transportation. (Also see Land Use Policy LU-39.)
- **Policy T-38: Inter-Jurisdictional Coordination.** Establish partnerships with adjacent jurisdictions and agencies, such as the University of California and the Berkeley Unified School District, to reduce parking demand and encourage alternative modes of transportation.
- **Policy T-41: Structured Parking.** Encourage consolidating surface parking into structure parking and redevelopment of surface lots with residential or commercial development where allowed by zoning.

City of Berkeley Complete Streets Policy

The Berkeley City Council adopted a Complete Streets Policy (Resolution 65,978-N.S.) in December 2012 to guide future street design and repair activities. “Complete streets” describes a comprehensive, integrated transportation network with infrastructure and design that allows safe and convenient travel along and across streets for all users, including pedestrians, bicyclists, persons with disabilities, motorists, movers of commercial goods, users and operators of public transportation, emergency vehicles, seniors, children, youth, and families. The policy includes principles and implementation requirements that address context sensitivity in design, stakeholder participation, incorporation of complete streets considerations into all phases of project development, consistency between relevant plans, design standard guidance, network connectivity considerations, Bicycle and Pedestrian Advisory Committee consultation, and annual programmatic evaluations.

City of Berkeley Bicycle Plan

The City of Berkeley Bicycle Plan, approved by Berkeley City Council in May 2017, contains the following policies and actions relevant to the proposed LRDP Update:

- Policy PL-1. Integrate bicycle network and facility needs into all City planning documents and capital improvement projects.

Actions

- Follow a multi-disciplinary project scoping process that incorporates the needs of all modes and stakeholders, both internal and external; the design process should include the City divisions, departments, and staff responsible for emergency response, parking, law enforcement, maintenance, and other affected areas.
- Ensure that all traffic impact studies, analyses of proposed street changes, and development projects address impacts on bicycling and bicycling facilities. Specifically, the following should be considered:
 - Consistency with General Plan, Area Plan, and Bicycle Plan policies and recommendations
 - Impact on the existing bikeway network
 - Degree to which bicycle travel patterns are altered or restricted by projects
 - Safety of future bicycle operations (based on project conformity to Bicycle Plan design guidelines and City, State, and Federal design standards)
- Policy PL-2. When considering transportation impacts under the California Environmental Quality Act, the City shall consider how a plan or project affects bicyclists per Berkeley General Plan Policy T-18.

Actions:

- Integrate VMT transportation impact analysis thresholds as a State-mandated alternative to level of service. Work with the Alameda CTC and the MTC to ensure conformity with County and Regional travel models.
- Establish new City traffic analysis standards that consider all modes of transportation, including pedestrians, bicycles, and transit in addition to automobiles, consistent with a comprehensive, integrated transportation network for all users as described in the City of Berkeley Complete Streets Policy. Utilize Level of Traffic Stress to quantify bicycle transportation in this network-based Complete Streets Policy context.
- Policy D-1. Design a Low Stress Bikeway Network suitable for the “Interested but Concerned,” to include people all ages and ability levels riding bicycles in Berkeley.

Actions:

- Design a network of continuous Low Stress Bikeways as identified in the Berkeley Bicycle Plan and Appendix F: Design Guidelines.
- Adopt the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide as the primary design guide for citywide bicycle facility design.
- Utilize the most recent State and Federal design standards and guidelines.
- Follow a multi-disciplinary design process that incorporates and balances the needs of all modes and stakeholders, both internal and external; design process should include City divisions, departments, and staff responsible for emergency response, parking, law enforcement,

maintenance, and other affected areas, as well as outside agencies such as AC Transit, BART, UC Berkeley, Caltrans and other responsible external agencies.

- Work with AC Transit, UC Berkeley, and other transit providers to design bikeways to minimize transit-vehicle interactions, optimize transit service and operations, and provide low stress bike-to-transit access environments in areas heavily served by transit. In designing for both bicycles and transit, utilize the latest national design best practices, such as the NACTO Transit Street Design Guide and Urban Street Design Guide. Local guidance, such as the forthcoming AC Transit Design Standards and Guidelines Manual for Safe and Efficient Multimodal Transit Stops and Corridors will also be consulted.

City of Berkeley Pedestrian Master Plan

The City of Berkeley Pedestrian Master Plan, adopted in June 2010, reiterates and emphasizes the General Plan policies and actions pertaining to pedestrians. Pedestrian Master Plan policies relevant to the proposed LRDP Update include:

- **Policy 1.1 (Sidewalks) Action A.1.** Routinely accommodate pedestrian in all roadway construction projects to achieve “complete streets” that serve all users, as funding allows.
- **Policy 3.2 (Major Public Institutions) Action A.** Encourage other agencies and institutions to match or exceed the City of Berkeley’s trip reduction and emission reduction programs for their its employees.
- **Policy 3.2 (Major Public Institutions) Action C.1.** Encourage the University of California to maintain and improve its facilities and programs that support and encourage pedestrians, bicyclists and transit riders.
- **Policy 3.2 (Major Public Institutions) Implementation Measure 1.** Encourage the University of California to develop and adopt a Pedestrian Safety Action Plan and to invest in the improvement of pedestrian safety at access points to the University of Berkeley campus.

The City of Berkeley is currently in the process of updating the Pedestrian Master Plan. The Draft 2020 Pedestrian Plan was published in November 2020. It is not known when the current version of this plan will be finalized and adopted.

City of Berkeley Vision Zero Resolution and Vision Zero Action Plan

The Berkeley City Council adopted a resolution in support of Vision Zero (Resolution 68,371-N.S.) in March 2018, with a goal of eliminating traffic deaths and severe injuries by 2028. This resolution directed a Vision Zero task force to develop a Vision Zero Action Plan, which was subsequently created and approved by Berkeley City Council in March 2020. The plan contains the following policies and actions relevant to the proposed LRDP Update:

- The Vision Zero Program: Collaboration—Collaborate with City departments, regional and community partners, and mobility providers to achieve Vision Zero goals. Continue commitment from Berkeley elected officials.
 - **Establish a standing Vision Zero Coordinating Committee** consisting of City staff, Commissioners, partner institutions, members of the community, advocacy groups, and community-based organizations who have a role in advancing Vision Zero action items with

quarterly meetings organized around a predetermined annual agenda. Seek to establish a funding source to compensate members of the community and community-based organizations to enable their participation.

- **Incorporate Vision Zero goals and actions into plan and policy updates** of all departments and partner institutions, including the upcoming City of Berkeley Zoning Ordinance update and General Plan Update, UC Berkeley’s Long Range Development Plan, Berkeley Unified School District’s Sustainability Plan, the City’s Strategic Plan, Departmental Priority Projects Lists, and departmental and individual staff work plans.
- **Safer Streets for Everyone: Project Design**—Design for vulnerable users of the transportation network, including people of all ages and abilities.
 - **Develop Curbside Management Guidelines** and incorporate them into the Vision Zero Guidelines to ensure Berkeley addresses safety concerns at the curb due to existing and emerging mobility options.
- **Safer Streets for Everyone: Public Awareness**—Create a culture of traffic safety by promoting awareness through public information programs and campaigns.
 - Partner with UC Berkeley, Berkeley City College, and Berkeley Unified School District to distribute targeted Vision Zero messaging for students.

5.15.1.2 EXISTING CONDITIONS

This section describes the existing transportation and circulation setting—the existing regional and local roadway network; existing regional and local transit service, including the UC Berkeley shuttle system; existing UC Berkeley transportation demand management programs; pedestrian network; bicycle network; commercial loading; emergency vehicle access; VMT; and parking.

Roadway Descriptions

There are several interstate and state highways that serve UC Berkeley properties and the surrounding areas.

- **Interstates 80 and 580 (I-80 and I-580)** share the freeway segment located approximately two miles west of the Campus Park. North of UC Berkeley, I-80 continues north through the cities of Richmond and Vallejo and continues northeast toward Sacramento. I-580 connects Berkeley with Richmond before crossing the Richmond-San Rafael Bridge and terminating at the US-101 interchange in Marin County. South of the Campus Park, I-80 connects the East Bay to San Francisco via the San Francisco-Oakland Bay Bridge, and I-580 continues southeast through the cities of Oakland and San Leandro, then east through the cities of Dublin and Livermore before continuing over Altamont Pass into San Joaquin County.
- **State Route 24 (SR-24)** is a state highway located about two miles south of the Campus Park. SR-24 connects the cities of Oakland to Walnut Creek in Contra Costa County. Within the EIR Study Area, SR-24 is a freeway with eight lanes, though auxiliary lanes exist between some interchanges.
- **State Highway 123 (San Pablo Avenue)** is a north-south arterial roadway that connects Downtown Oakland in the south to Crockett in the north via the cities of Emeryville, Berkeley, Albany, El Cerrito, Richmond, San Pablo, Pinole, and Hercules. The segment between I-580 in Oakland and El Cerrito is

designated a state highway. Within the city of Berkeley, San Pablo Avenue has four lanes with a raised median for its entire length. It connects to several east-west roadways that provide access to the Campus Park and surrounding areas, including University Avenue and Dwight Way.

- **State Highway 13 (Ashby Avenue)** is an east-west roadway that runs from the I-80/I-580 to State Highway 13 (Tunnel Road) in Berkeley at Domingo Avenue. Ashby Avenue has four lanes west of San Pablo Avenue and two lanes in most places east of San Pablo Avenue. During the peak commute hours, on-street parking restrictions on the north side of the street in the morning and the south side in the evening provide an additional travel lane for commuters. Near the Campus Park, it connects to several north-south roadways that provide access to the UC Berkeley properties and the surrounding areas.
- **State Highway 13 (Tunnel Road)** is an east-west roadway that runs from Domingo Avenue in Berkeley to Hiller Drive in Oakland, where the SR-13 freeway ramps terminate. This segment of Tunnel Road is a two-lane roadway with a striped median between Domingo Avenue and Alvarado Road, and a two-lane divided roadway between Alvarado Road and Hiller Drive. Tunnel Road provides access to the area south of the UC Berkeley campus from areas south and east of the EIR Study Area.

In addition to the interstate and state highways, several major roadways make up the local street system surrounding and approaching the UC Berkeley campus.

- **Martin Luther King Jr. Way/The Alameda** is a north-south roadway that runs from Adeline Street to Hopkins Street in Berkeley. Martin Luther King Jr. Way is a four-lane roadway with a striped median south of Hearst Avenue and a two-lane roadway north of Hearst Avenue. Martin Luther King Jr. Way intersects with several east-west arterial roadways that provide direct access to the Campus Park. South of Adeline Street the Martin Luther King Jr. Way corridor continues into the city of Oakland and to SR-24.
- **Shattuck Avenue** is a north-south street that runs from just south of SR-24 in Oakland to Arlington Avenue in Berkeley. Shattuck Avenue is a two-lane roadway from its southern terminus to Adeline Street, a four-lane roadway with a raised median from Adeline Street to Vine Street, and a two-lane roadway from Vine Street to Arlington Avenue. Shattuck Avenue intersects with several east-west arterial roadways that provide direct access to the Campus Park.
- **Adeline Street** is a north-south roadway that runs from the Port of Oakland to Shattuck Avenue in Berkeley. Near the UC Berkeley campus, Adeline Street is primarily a six-lane roadway, though it fluctuates between a two-lane and four-lane roadway along the southern part of the alignment.
- **Telegraph Avenue** is a north-south roadway that runs from Broadway in Oakland to Bancroft Way in Berkeley, terminating at the Campus Park. Telegraph Avenue is primarily a four-lane roadway south of Dwight Way to 52nd Street, where it becomes a two-lane roadway to its terminus. North of Dwight Way, Telegraph Avenue is a two-lane, one-way, northbound roadway. Telegraph Avenue provides direct access to the Campus Park as well as north-south connectivity to areas to the south of the UC Berkeley campus.
- **College Avenue** is a north-south roadway that runs from Broadway in Oakland to Bancroft Way in Berkeley. College Avenue is a two-lane roadway for its entirety. College Avenue provides direct access to the Campus Park at its terminus with Bancroft Way as well as north-south connectivity to areas to the south of the UC Berkeley campus.

- **Bancroft Way** and **Durant Avenue** form an east-west, one-way couplet between Piedmont and Shattuck Avenues. Both roadways extend west of Shattuck Avenue as two-way streets, with Bancroft Way extending into West Berkeley and Durant Avenue extending to Milvia Street. The roadways are generally two lanes with some three-lane segments. Bancroft Way serves as the southern border to the Campus Park.
- **University Avenue** is an east-west roadway that runs from I-80/I-580 to Oxford Street in Berkeley. University Avenue is a four-lane divided roadway between I-80/I-580 and Sixth Street and is a four-lane roadway with a raised median between Sixth and Oxford Streets, where it terminates at the Campus Park. It provides direct access to UC Berkeley from I-80/I-580 and numerous north-south roadways west of the UC Berkeley campus.
- **Oxford Street** is a north-south roadway that runs along the west side of the Campus Park and continues north through Berkeley. South of the Campus Park the roadway becomes Fulton Street which extends south to Ashby Avenue. There are traffic diverters along Fulton Street south of Dwight Way that restrict through-traffic movements. The Oxford Street corridor has four lanes along the Campus Park frontage and then transitions to a two-lane roadway north and south of the Campus Park.
- **Gayley Road, Piedmont Avenue, Warring Street, Derby Street, and Belrose Avenue** collectively are a north-south, two-lane roadway that extends along the east side of the Campus Park and the west and south side of the Clark Kerr Campus. The roadway is named Gayley Road north of Stadium Rim Road and Piedmont Avenue to the south. North of the Campus Park the road becomes La Loma Avenue; south of Dwight Way, Piedmont Avenue turns into Warring Street, which terminates at Derby Street. Drivers continue along Derby Street to Belrose Avenue and then south to Claremont Avenue at State Highway 13.
- **Dwight Way** is an east-west roadway that runs from Fourth Street in the west to Sports Lane in the east in Berkeley. Dwight Way is a two-lane, two-way street west of Martin Luther King Jr. Way and east of Piedmont Avenue. Between Martin Luther King Jr. Way and Piedmont Avenue, Dwight Way is a two-lane, one-way couplet with Haste Street. Dwight Way provides east-west connectivity to areas west and south of the UC Berkeley campus, as well as direct access to the Clark Kerr Campus.
- **Stadium Rim Road** and **Centennial Drive** collectively are an east-west roadway that extends around the California Memorial Stadium and connects the Campus Park with the Hill Campus West. They are both two-lane roadways, and Centennial Drive winds through the Hill Campus West to the Hill Campus East and terminates at Grizzly Peak Boulevard. Grizzly Peak Boulevard is a two-lane roadway that extends north-south through the Berkeley hills near Kensington to the north and Skyline Boulevard in the south.
- **Hearst Avenue** is an east-west roadway that extends along the north side of the Campus Park. It is generally a two-lane roadway that extends from Eastshore Highway in the west to just east of Gayley Road in the east.

Transit Services

The following section provides an overview of available regional and local transit serving the UC Berkeley campus. The information presented below (transit service levels, etc.) generally summarizes conditions that existed before travel patterns were disrupted by the COVID-19 pandemic.

- **Bay Area Rapid Transit.** The Bay Area Rapid Transit service, or BART, provides regional commuter rail service between San Francisco and the East Bay (Pittsburg/Bay Point, Richmond, Dublin/Pleasanton, and Berryessa /North San Jose), as well as between San Francisco and San Mateo County (SFO Airport and Millbrae). Weekday hours of operation are between 5:00 a.m. and midnight. During the weekday evening (PM) peak period, headways are 5 to 15 minutes along each line. Within Berkeley, BART operates underground along Martin Luther King Jr. Way, Adeline Street, and Shattuck Avenue before turning west underneath Hearst Avenue.

The nearest BART station to the UC Berkeley campus is the Downtown Berkeley BART station, which is accessible from Campus Park via Bear Transit or by walking. During April 2019, approximately 22,500 (10,900 entries and 11,600 exits) weekday riders used the Downtown Berkeley BART station. The Rockridge BART station also has bus transit connections to the Campus Park, so some riders destined for the UC Berkeley campus may use the Rockridge BART station. During April 2019, approximately 10,800 (5,300 entries and 5,500 exits) weekday riders used the Rockridge BART station.

- **Alameda-Contra Costa County Transit District.** The Alameda-Contra Costa County Transit District (AC Transit) is the primary local bus service operator in western Alameda and Contra Costa counties, with Transbay routes that provide service to the city of San Francisco and to San Mateo and Santa Clara counties. AC Transit operates 10 routes that serve the UC Berkeley campus and the surrounding area. AC Transit routes in the EIR Study Area and their characteristics as of Fall 2019 are summarized in Table 5.15-1, AC Transit Operations, and presented in Figure 5.15-1, Existing Transit Network.
- **Bear Transit.** Bear Transit is the shuttle system operated by UC Berkeley that primarily connects the Campus Park to major transit facilities, parking facilities, surrounding neighborhoods, and other UC Berkeley sites, including the Hill Campus West, the Hill Campus East, and the Richmond Field Station. Service includes five daytime routes and three nighttime safety routes. As of 2019, Bear Transit shuttles transport approximately 2,100 passengers daily across all routes. Night safety routes represent about 30 percent of the daily ridership. Bear Transit shuttles are available to the public.

Bear Transit Shuttle routes in the EIR Study Area and their characteristics as of Fall 2019 are summarized in Table 5.15-2, Bear Transit Shuttle Operations, and on Figure 5.15-1, Existing Transit Network.

A new route, the R-Line (Reverse Perimeter via Southside) was instituted in September 2020. The route operates counter-clockwise on Shattuck Avenue, Channing Way, College Avenue, Dwight Way, Prospect, Channing Way, Piedmont Avenue, Gayley Road, Hearst Avenue, Oxford Avenue, and University Avenue, and connects the Downtown Berkeley BART station with the Southside residence halls, the Clark Kerr Campus, and the Campus Park.

- **Lawrence Berkeley National Laboratory Shuttles.** The Lawrence Berkeley National Laboratory (LBNL) Shuttles provide service between the LBNL campus and the Campus Park, Downtown Berkeley BART Station, and other destinations in the vicinity. LBNL Shuttles are only open to LBNL employees and visitors and are not available to the public.

TABLE 5.15-1 AC TRANSIT OPERATIONS

Route	Peak Weekday Headways (Minutes)	Off-Peak Weekday Headways (Minutes)	Hours of Operation	Neighborhoods Served by Route	Nearest Stop Location	Average Weekday Route Ridership	Boardings/ Alightings at the Campus Park
6	11-15	11-15	5 a.m. to 12 a.m.	Downtown Berkeley, Southside, Bushrod, Temescal, Oakland	Bancroft Way and Telegraph Avenue	6,150	1,882
7	21-30	21-30	Weekdays: 6 a.m. to 8 p.m. Weekends: 8 a.m. to 7 p.m.	Downtown Berkeley, North Berkeley, Kensington, El Cerrito	Oxford Street and Hearst Avenue	740	61
36	21-30	21-30	6 a.m. to 12 a.m.	Downtown Berkeley, West Berkeley, Emeryville, West Oakland	Bancroft Way and Piedmont Avenue	1,510	632
51B	<10	<10	Weekdays: 5 a.m. to 12 a.m. Weekends: 6 a.m. to 12 a.m.	Rockridge, Elmwood, Downtown Berkeley, West Berkeley	Bancroft Way and College Avenue	9,330	4,195
52	11-15	16-20	Weekdays: 6 a.m. to 11 p.m. Weekends: 8 a.m. to 8 p.m.	University Village, Albany, North Berkeley, Downtown Berkeley	Hearst Avenue and Arch Street	3,130	2,582
65	30+	30+	Weekdays: 6 a.m. to 8 p.m. Weekends: 8 a.m. to 7 p.m.	Downtown Berkeley, Berkeley Hills	Hearst Avenue and Arch Street	590	265
67	21-30	21-30	Weekdays: 6 a.m. to 7 p.m. Weekends: 6 a.m. to 7 p.m.	Downtown Berkeley, North Berkeley, Kensington	Oxford Street and University Avenue	430	83
79	21-30	21-30	Weekdays: 6 a.m. to 10 p.m. Weekends: 6 a.m. to 8 p.m.	Rockridge, Downtown Berkeley, North Berkeley, Kensington, El Cerrito	Bancroft Way and Piedmont Avenue	740	302
F	21-30	21-30	Weekdays: 6 a.m. to 1 a.m. Weekends: 6 a.m. to 12 a.m.	Downtown Berkeley, South Berkeley, Bushrod, Emeryville, West Oakland	Hearst Avenue and Walnut Street	2,040	524
851	N/A	N/A	12 a.m. to 4 a.m.	Downtown Berkeley, Southside Berkeley, Rockridge, Uptown and Downtown Oakland, Alameda, Fruitvale	Bancroft Way and College Avenue	250	15

Notes: Hours of operation are approximate.

Source: AC Transit, Winter 2019 ridership; summarized by Fehr & Peers, 2020.

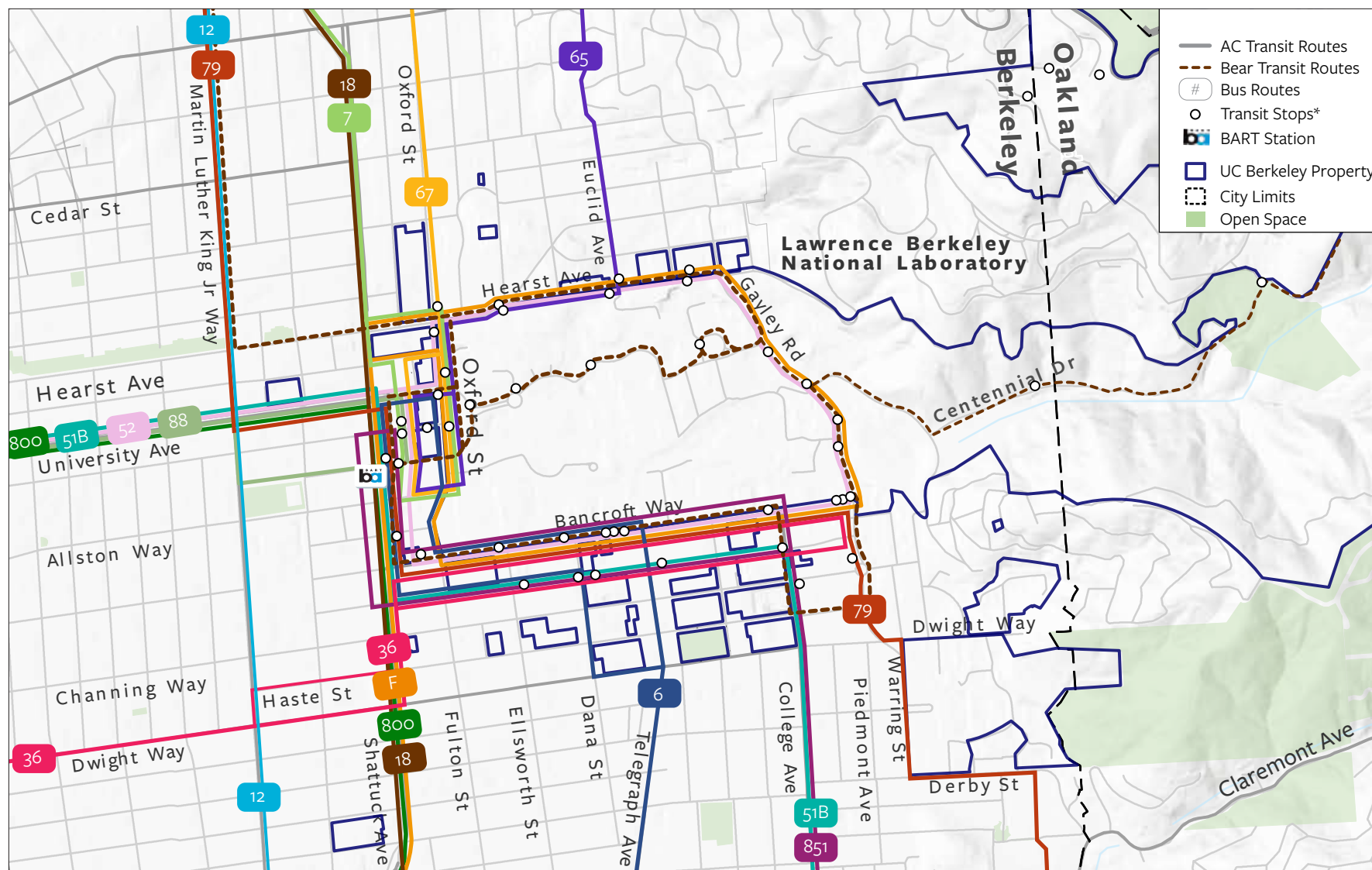


Figure 5.15-1
Existing Transit Network

* **Note:** The transit stops shown on the map are limited to those located along the perimeter of campus.

TABLE 5.15-2 BEAR TRANSIT SHUTTLE OPERATIONS

Route	Peak Weekday Headways (Minutes)	Off-Peak Weekday Headways (Minutes)	Hours of Operation	Neighborhoods Served by Route	Nearest Stop Location	Total Route Ridership
H-Line (Hill Line)	30	30	7:35 a.m. to 7:25 p.m.	UC Berkeley Hill Campus (West and East), UC Botanical Garden, Hearst Mining Circle	Various through and around campus	326
P-Line (Perimeter Line)	30	30	7:00 a.m. to 7:30 p.m.	Downtown Berkeley, Northside Berkeley, Southside Berkeley	Various through and around campus	818
C-Line (Downtown Berkeley/Central Campus via Hearst Line)	20	N/A	6:45 a.m. to 10:45 a.m. 4:15 p.m. to 7:15 p.m.	Downtown Berkeley, Northside Berkeley	Various through and around campus	210
RFS Line (Richmond Field Station Line)	60	60	6:45 a.m. to 6:05 p.m.	Downtown Berkeley, Richmond Field Station	West Crescent	69
R-Line (Reverse Perimeter)	30	30	7:00 a.m. to 7:30 p.m.	Downtown Berkeley, Northside Berkeley, Southside Berkeley	Various through and around campus	N/A
North Berkeley BART – Shared Services Shuttle	20	N/A	6:40 a.m. to 9:20 a.m. 4:05 p.m. to 6:10 p.m.	West Berkeley, Downtown Berkeley	North Berkeley BART Station	63
North Side Line	N/A	30	7:45 p.m. to 2:15 a.m.	Downtown Berkeley, Northside Berkeley, Southside Berkeley	Various through and around campus	134
South Side-1/D2D Line	N/A	15	7:30 p.m. to 2:30 a.m.	Downtown Berkeley, Southside Berkeley	Various through and around campus	290
South Side-2 Line	N/A	15	7:30 p.m. to 2:30 a.m.	Downtown Berkeley, Southside Berkeley	Various through and around campus	187

Notes: Headway are in minutes and hours of operation are approximate.

a. New line instituted in 2020; ridership not available.

Source: UC Berkeley, June 2019; prepared by Fehr & Peers, 2020.

Transportation Demand Management

There are many factors that determine how people travel to/from work, including home location, work shifts, access to transit, travel incentives and disincentives (e.g., how convenient or costly it is to park), or other obligations before or after work (e.g., childcare drop-off or pick-up). A transportation demand management (TDM) program is a set of policies and programs that include incentives, information, and education to encourage employees to commute to work by modes other than driving alone. The UC Berkeley TDM Strategic Plan is designed to address faculty, staff, and student travel to the UC Berkeley campus and includes strategies that emphasize alternative commuting options such as public transit, biking,

walking, carpooling, and car sharing. The key elements of the UC Berkeley TDM Strategic Plan are summarized in Table 5.15-3, Existing UC Berkeley Transportation Demand Management Program Elements.

TABLE 5.15-1 EXISTING UC BERKELEY TRANSPORTATION DEMAND MANAGEMENT PROGRAM ELEMENTS

TDM Strategy	Description
Transit Pass Subsidies	AC Transit Class Pass provided for all students. In Spring 2019, 18,300 Class Passes were issued and students used them to take 9,100 transit rides per day. AC Transit Easy Pass for faculty and staff: 50% to 80% discount. In Spring 2019, 800 rides per day were taken using subsidized Easy Passes. BART subsidies for nonstudents (\$10 per month)
Shuttle	Bear Transit provides shuttle service between the various UC Berkeley campus destinations, the surrounding communities, and the regional transit network.
Priced Permit Parking	Parking permits are priced to influence demand.
Pre-Tax Commuter Benefits Program	The Pre-Tax commuter benefits program allows employees to reduce their public transit and vanpool costs by about one-third. The program works by allowing participants to deduct up to \$270 per month (as of 2020) from their paycheck without paying payroll taxes on this income.
Bike Share	BayWheels offers bicycle share via five stations around the Campus Park and subsidized memberships for Educational Opportunity Program students.
Carpool Parking	Discounted parking for UC Berkeley faculty, staff, and students with a valid carpool permit.
Online Commute Planning Tool	BerkeleyMoves! Commuter Club website and app used to pair commuters who are taking trips with similar characteristics (i.e., similar origins and destinations). The service also informs commuters of how their mode choice impacts trip costs as well as the environment.
Bicycle Parking	Improved bicycle parking and FixIt Stations make commuting by bicycle easier for faculty, staff, and students.
Carshare	Zipcars and GIG Carshare are available for students and employees to use, and 14 dedicated Zipcar spaces are provided on the UC Berkeley campus. Zipcar offers discounted fees for faculty, staff, and students.
Bear Transit Night Safety Services	The Night Safety Shuttle service is an extension of the Bear Transit daytime service and provides safe nighttime transit to and from the Campus Park. Bear Transit Night Safety Shuttles are free to all and operate year-round.
Designated TDM Administrator and increased marketing	A UC Berkeley TDM Administrator manages the TDM program, which includes the production and distribution of marketing materials to educate faculty, staff, and students about the benefits of the program.

Source: UC Berkeley, Spring 2019; Fehr & Peers 2020.

UC Berkeley Mode Share

Most faculty, staff, and students commute to the UC Berkeley campus by modes other than driving, with mode shares varying between different population groups. Table 5.15-4, Existing UC Berkeley Population Commute Mode Shares, shows the commute mode shares of different population groups based on the 2019 UC Berkeley Transportation Survey. This table reflects the shares for all UC Berkeley students, faculty, and staff.

As shown in Table 5.15-4, Existing UC Berkeley Population Commute Mode Shares, 46 percent of faculty and 44 percent of staff drive alone, with an additional 7 percent and 9 percent, respectively, either carpooling, being dropped off, or using ride hailing services such as Lyft or Uber. Faculty are more likely to ride bicycles (18 percent) or walk to campus (17 percent), and staff are more likely to take transit (25 percent), reflecting that faculty are more likely to live closer to campus. Among students, almost three-quarters of undergraduates walk to campus (74 percent), followed by transit use (13 percent) and riding a bicycle (7 percent), while graduate students are almost evenly split between walking (31 percent), transit (30 percent), and riding a bicycle (28 percent). Undergraduates are less likely to drive alone to campus (4 percent)

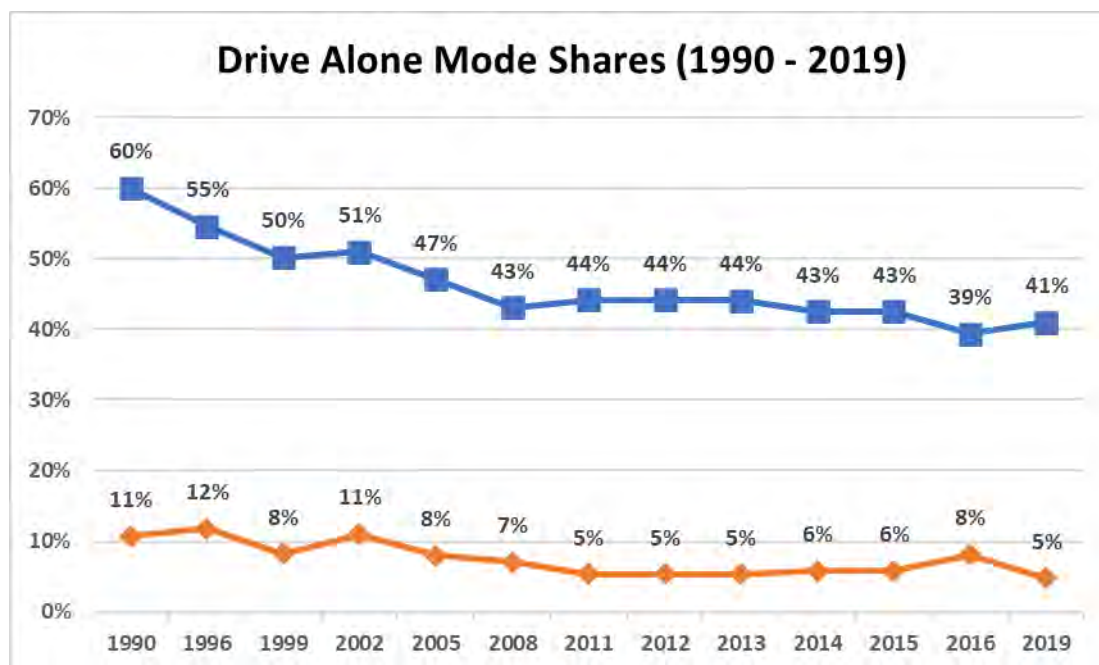
compared to graduate students (8 percent) and are less likely to carpool, be dropped off, or use a ride hailing service (2 percent and 3 percent, respectively). Altogether, approximately 50 percent of the UC Berkeley population commutes to and from the UC Berkeley campus by walking, with 18 percent using transit, 15 driving alone, and 13 percent riding a bicycle.

TABLE 5.15-4 EXISTING UC BERKELEY POPULATION COMMUTE MODE SHARES

Mode	Faculty	Staff	All Employees	Undergraduate Students	Graduate Students	All Students	Aggregated Total
Drive Alone	46%	44%	44%	4%	8%	5%	15%
Carpool	5%	6%	6%	0%	1%	1%	2%
Dropped Off	1%	2%	2%	1%	1%	1%	1%
Ride-Hail	1%	1%	1%	1%	1%	1%	1%
Bicycle	18%	12%	14%	7%	28%	12%	13%
Walk	17%	10%	12%	74%	31%	62%	50%
Transit	12%	25%	21%	13%	30%	18%	18%

Source: UC Berkeley 2019 Transportation Survey data, reflecting only the population that commutes; summarized by Fehr & Peers, 2020.

The chart below shows the historical drive-alone mode shares for the entire UC Berkeley population, including those that may not travel to the UC Berkeley campus on a given day due to telecommuting or other reasons. In 2019, 41 percent of all employees traveled to campus by single-occupant vehicle, and 5 percent of students traveled to campus by single-occupant vehicle.



Source: UC Berkeley Transportation Survey data, reflecting the net drive alone rate of the entire population of employees and students.

Pedestrian Circulation

Walking to, from, and within UC Berkeley campus is a common travel mode option for many UC Berkeley faculty, staff, and students. Based on the 2019 UC Berkeley Transportation Survey, approximately 50 percent of UC Berkeley affiliates commute to and from the UC Berkeley campus by walking.

Pedestrians can access the Campus Park via several gateways along its perimeter. Main gateways are located along Oxford Street (at University Avenue/Crescent Lawn and Center Street/Crescent Lawn), Bancroft Way (at Telegraph Avenue/Sather Road and College Avenue/Birge Path), Gayley Road (at Piedmont Avenue/South Drive/Stadium Rim Way and University Drive), and Hearst Street (at Euclid Avenue/Haviland Path and MacFarlane Lane). Secondary gateways are located along Oxford Street (at Berkeley Way, Addison Street, and Frank Schlessinger Way), Bancroft Way (at Dana Street/Spieker Plaza, Sather Lane, Barrow Lane, Hearst Field Annex, Hearst Gymnasium, and the Hearst Museum of Anthropology), Piedmont Avenue/Gayley Road (at Optometry Lane and Haas Path), and Hearst Avenue (at Sutardja Dai Hall and Spruce Street). Within the Campus Park, pedestrians can travel via a network of primary and secondary pedestrian routes. Primary routes typically consist of sidewalks along internal UC Berkeley campus roadways, and secondary routes are typically pedestrian paths that connect internal UC Berkeley campus roadways to buildings and other facilities.

Intersections within the Campus Park provide painted crosswalks and curb ramps compliant with the Americans with Disabilities Act (ADA) that are generally bidirectional, high contrast in color, and include truncated domes. Along the perimeter of the Campus Park, high-visibility continental crosswalks are located at each of the signalized intersections along Oxford Street, Bancroft Way (except at Telegraph Avenue/Sather Road, which has a decorative crosswalk), Gayley Road, and Hearst Avenue. Painted crosswalks are located at stop-controlled intersections along the same roadways except at the Bancroft Way/Piedmont Avenue intersection, which has a high-visibility continental crosswalk. High-visibility continental crosswalks are located at uncontrolled midblock pedestrian crossings along Gayley Road (two crossings north of South Drive and one north of University Drive) and Bancroft Way (at Sather Lane). Most intersections and crossings along the perimeter of the Campus Park have ADA-compliant curb ramps (except for the northeast and southeast corners at Bancroft Way/Piedmont Avenue and the midblock crossing along Gayley Road north of South Drive).

Pedestrian access to the Clark Kerr Campus is via several locations along Warring and Derby Street as well as Dwight Way. The Warring Street access includes high-visibility continental crosswalks at the Parker Street all-way stop control intersection. There are two pedestrian connections along Derby Street at Southwest Place and at Eastway Drive; neither is located at an intersecting street. The pedestrian connections on Dwight Way at North Street and at Sports Lane do not have marked crosswalks, and the curb ramps provided are not ADA compliant. In addition, the sidewalk facilities are discontinuous on Dwight Way east of Sports Lane.

There are limited pedestrian facilities around the Hill Campus East and the Hill Campus West. While fire roads and pathways are located within these two zones, the sidewalk system generally exists only between and around buildings and connections to adjacent parking lots. The primary roads, Centennial Drive and Grizzly Peak Boulevard, do not have continuous sidewalks.

Title II of the Americans with Disabilities Act requires State agencies to develop a transition plan to mitigate all barriers to accessing the agency's services. In compliance, UC Berkeley is undertaking development of an ADA transition plan, with four major phases. The first is a detailed survey to identify existing physical barriers in both the interior and exterior campus environments. Second, solutions are proposed to mitigate all identified barriers. Third, a schedule or plan for barrier mitigation is developed. Fourth, the final plan will be built into a database that can track implementation. Additionally, a self-evaluation will be prepared to address programmatic barriers to accessibility.

Existing pedestrian routes and their relationship to the City of Berkeley street system are presented in Figure 5.15-2, Existing Pedestrian Routes. UC Berkeley generates the greatest pedestrian activity at the Campus Park, so pedestrian counts were conducted between 7:00 a.m. and 7:00 p.m. throughout the Campus Park and along adjacent roadways, with 24-hour counts at select locations, on a weekday in September 2019 with school in regular session. The existing 12-hour pedestrian volumes are presented in Figure 5.15-3, Existing Pedestrian Volumes by Location.

Sproul Plaza has the highest pedestrian flow on the Campus Park, with over 50,000 pedestrian trips over the 12-hour period. Several other areas throughout the Campus Park have over 10,000 pedestrian trips - adjacent to the Campus Park to the Campus Park, the highest numbers of pedestrian were observed along Telegraph Avenue (31,000), College Avenue (15,000), Euclid Avenue (12,000), and Center Street (10,000).

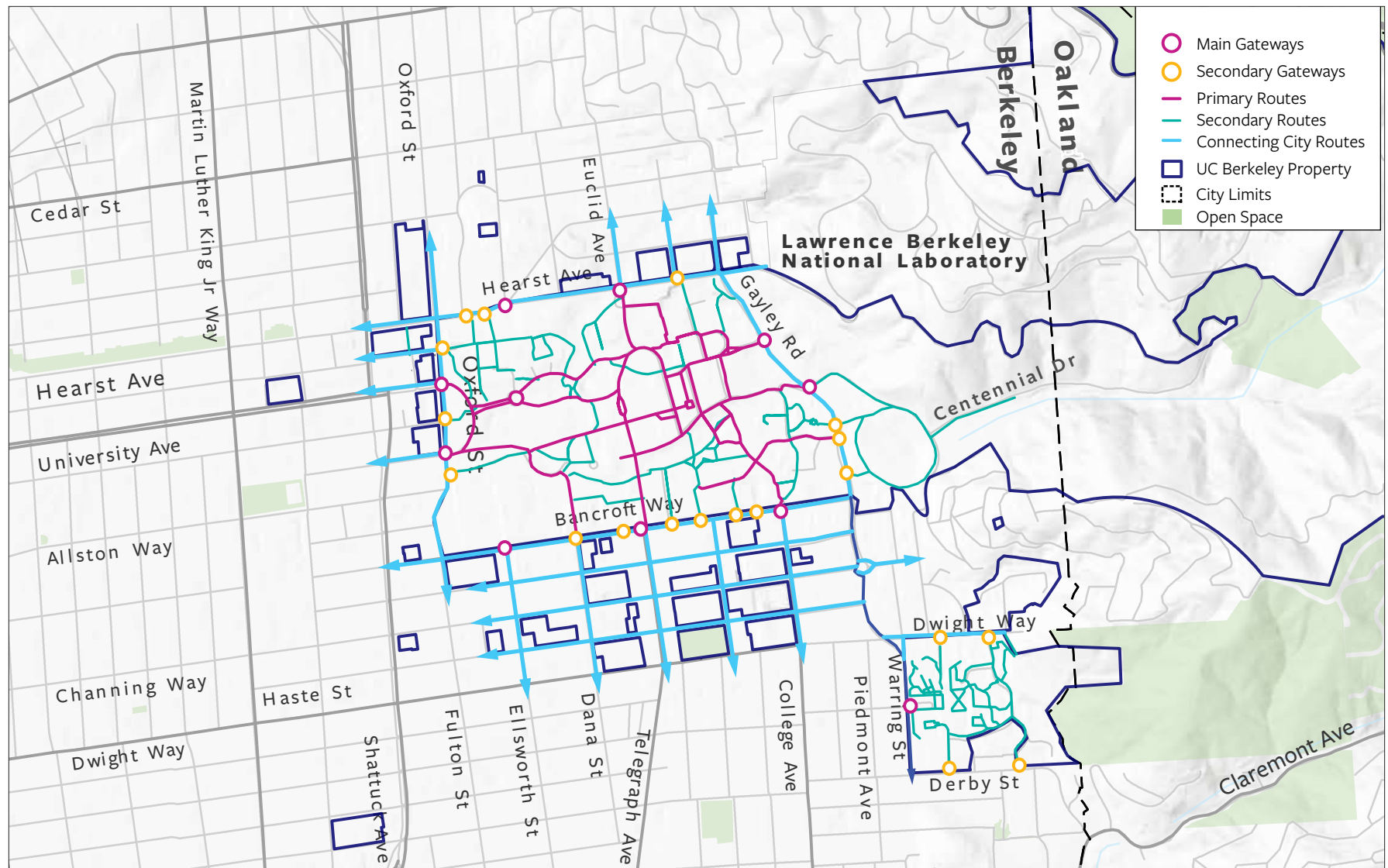
The pedestrian ingress and egress volumes to/from the Campus Park in 15-minute increments is presented on Figure 5.15-4, Existing Pedestrian Activity by Time of Day (Pedestrians Entering and Leaving the Campus Park). Most pedestrians enter the Campus Park during the morning and early afternoon periods, with the highest number of pedestrians arriving to the UC Berkeley campus around 9:15 a.m. Most pedestrians leave the UC Berkeley campus between 11:00 a.m. and 5:30 p.m., with the highest number leaving at 5:00 p.m.

Bicycle Circulation

Based on the 2017 City of Berkeley Bicycle Plan, bicycle facilities have the following classifications:

- **Class I Multiuse Paths** provide completely separated, exclusive right-of-way for bicycling, walking, and other nonmotorized uses.
- **Class II Bicycle Lanes** are striped, preferential lanes for one-way bicycle travel on roadways and may include buffer striping to add separation between vehicle lanes or parking lanes.
- **Class III Bicycle Routes** have sharrow striping and are often signed bicycle routes where people riding bicycles share a travel lane with people driving motor vehicles.
- **Class IV Cycle Track**, or separated / protected bikeway, is an on-street bicycle lane that is physically separated from motor vehicle traffic by a vertical element (raised island, bollards, or on-street parking).

Within the Campus Park, bicycle circulation is divided into primary and secondary routes. The Campus Park internal roadways designated as primary bicycle routes are a mix of routes where cyclists share the roadway with vehicular traffic and routes where cyclists share paths with pedestrians. Secondary routes within the Campus Park are provided via a network of pathways that bicyclists most often share with pedestrians. A bicycle dismount zone exists within the Campus Park along Sproul Plaza/Sather Road (north of Telegraph Avenue/ Bancroft Way) and along some internal campus roadways that connect with Sather Road.



Source: Fehr & Peers, 2021.

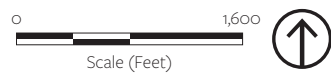
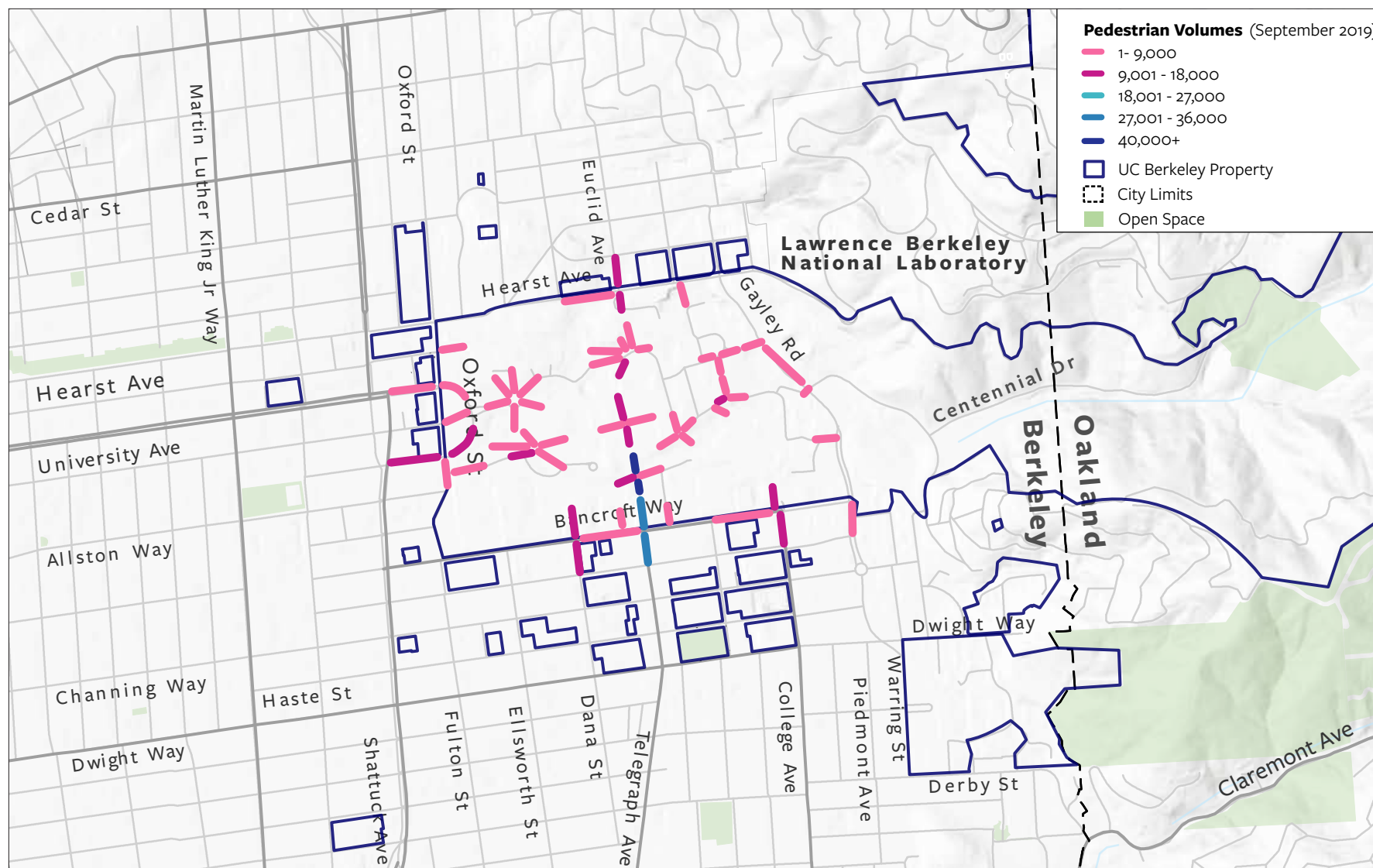


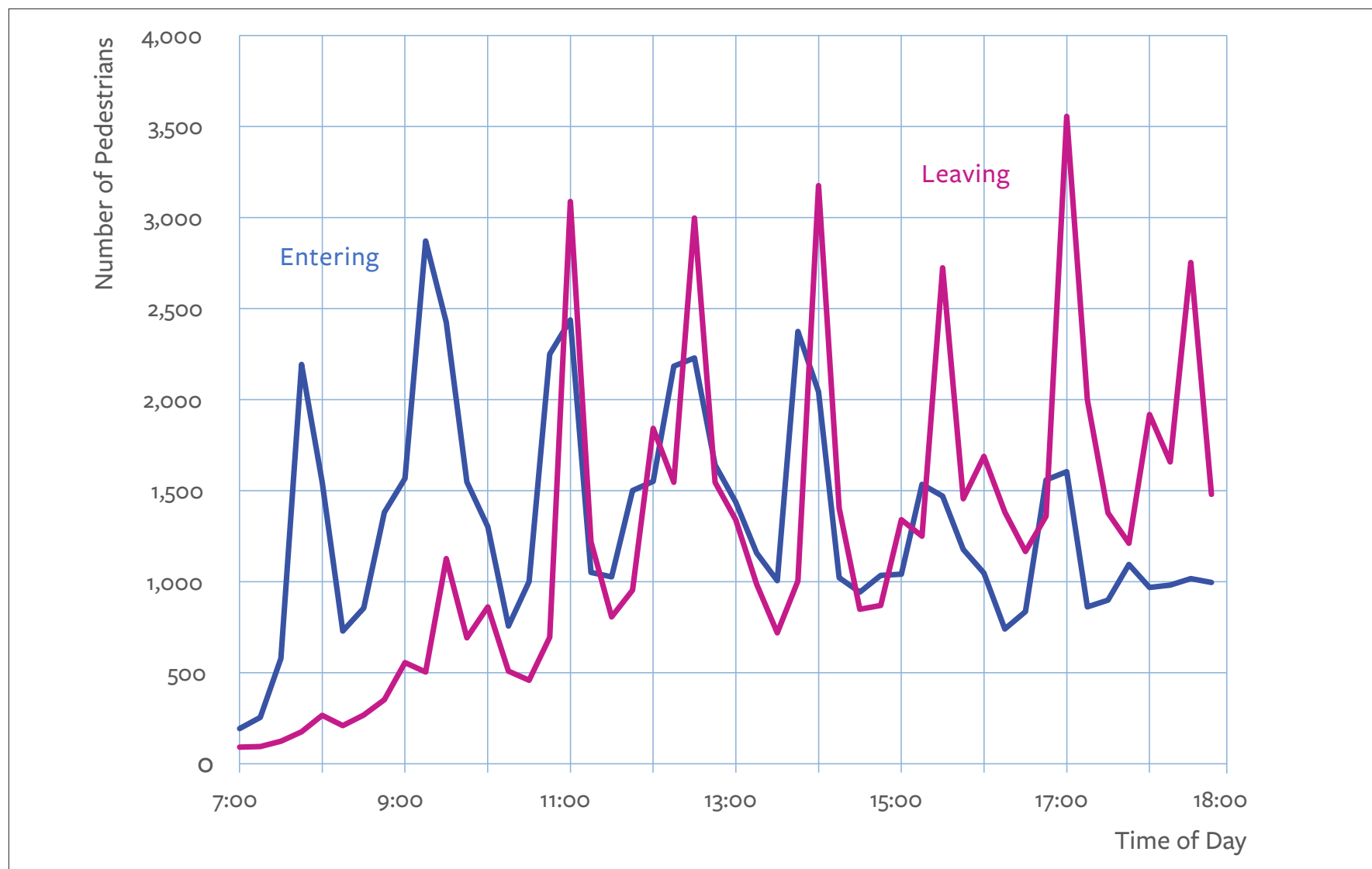
Figure 5.15-2
Existing Pedestrian Routes



Source: Fehr & Peers, 2021.



Figure 5.15-3
Existing Pedestrian Volumes by Location



Source: Fehr & Peers, 2021.

Figure 5.15-4

Existing Pedestrian Activity by Time of Day (Pedestrians Entering and Leaving the Campus Park)

Figure 5.15-5, UC Berkeley Campus Existing Bicycle Network, presents the bicycle facilities located within or near the UC Berkeley campus by classification. The figure illustrates the changing bicycle classifications along many roadways adjacent to and near UC Berkeley. For example, Bancroft Way starting at Piedmont Avenue has no bicycle facilities to Barrow Lane, a Class III Bicycle Route to Dana Street, a Class IV Cycle Track to Fulton Street, Class III Bicycle Route to Shattuck Avenue, and no bicycle designation to Milvia Street. Hearst Avenue along the north side of the Campus Park has a combination of Class III Bicycle Routes, Class IV Cycle Track, and Class II Bike Lanes depending on segment and direction of travel.

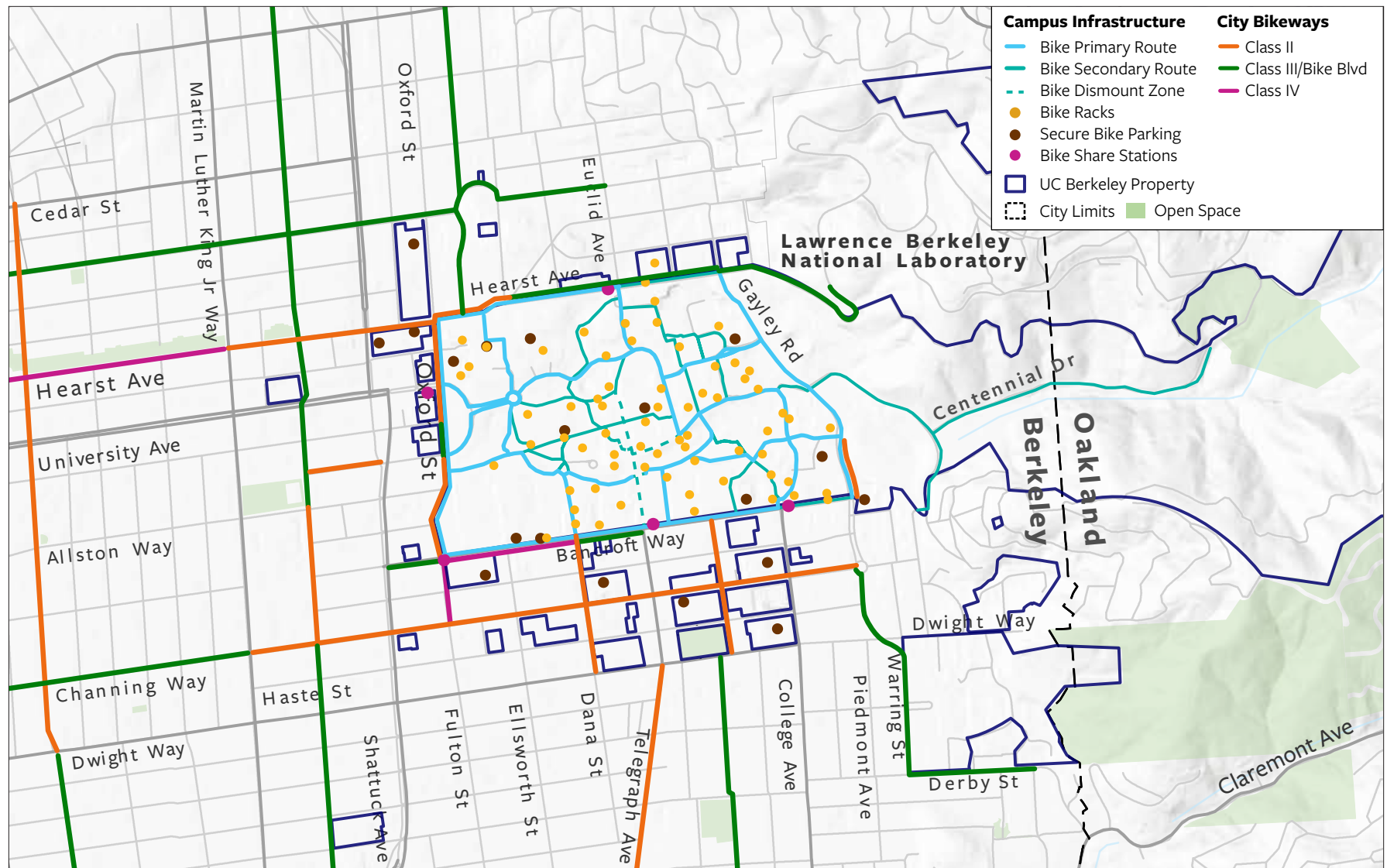
Bicycle parking and bicycle share facilities exist within and adjacent to the Campus Park. BayWheels offers a bicycle share service that can be accessed via five stations along the UC Berkeley campus's peripheral roadway network. Bicycle share stations are located at or near the Oxford Street/University Avenue, Oxford Street/Bancroft Way, Bancroft Way/Telegraph Avenue, Bancroft Way/College Avenue, and Hearst Avenue/Euclid Avenue intersections. Secure bicycle parking exists at numerous locations within and adjacent to the Campus Park, and most of these are restricted to use by occupants of the buildings in which they are located. Bicycle racks also exist within the Campus Park and are more prevalent than secure bicycle parking facilities. The primary bicycle parking and bicycle share facilities are shown in Figure 5.15-5, UC Berkeley Campus Existing Bicycle Network.

Bicycling at UC Berkeley has increased in popularity significantly over the past several years. Since UC Berkeley's current LRDP was prepared, bicycle mode share has increased by almost 50 percent. This increase can be attributed to improved bicycle infrastructure and parking facilities in Berkeley and on the UC Berkeley campus. For example, before and after studies showed that the Bancroft Complete Streets Project increased bicycle volumes by 50 percent (from 620 to 960), while vehicle speeds and volumes remained roughly the same. Based on the 2019 UC Berkeley Transportation Survey, approximately 13 percent of people commute to and from campus by bicycle.

Bicycle activity related to the UC Berkeley campus was observed to be highest to, from, and within the Campus Park. Bicycle counts were conducted at numerous locations throughout the Campus Park and along adjacent roadways on a weekday in September 2019. Counts were collected at 15-minute intervals between 7:00 a.m. and 7:00 p.m., with 24-hour counts at select locations. Figure 5.15-6, Existing Bicycle Volumes by Location, shows the bicycle volumes. Bicycles are seen in high volumes on the north, west, and south sides of the Campus Park. Between 7:00 a.m. and 7:00 p.m., the September 2019 bicycle counts established that approximately:

- 5,000 bicycle trips enter/exit the Campus Park.
- 800 bicycles enter and exit the Campus Park at College Avenue.
- 1,300 bicycles travel through Sproul Plaza despite the existing Dismount Zone.
- 200 daily riders use the BayWheels bicycle share stations around campus.

The bicycle ingress and egress volumes to/from the Campus Park in 15-minute increments is presented in Figure 5.15-7, Existing Bicycle Activity by Time of Day (Bicyclists Entering and Leaving the Campus Park). Most bicyclists enter the Campus Park during the morning commute period, with the highest number of bicyclists arriving to campus around 9:30 a.m. Most bicyclists leave the Campus Park between 5:00 p.m. and 7:00 p.m., with the highest number leaving at 5:00 p.m.



Source: Fehr & Peers, 2021.

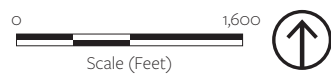
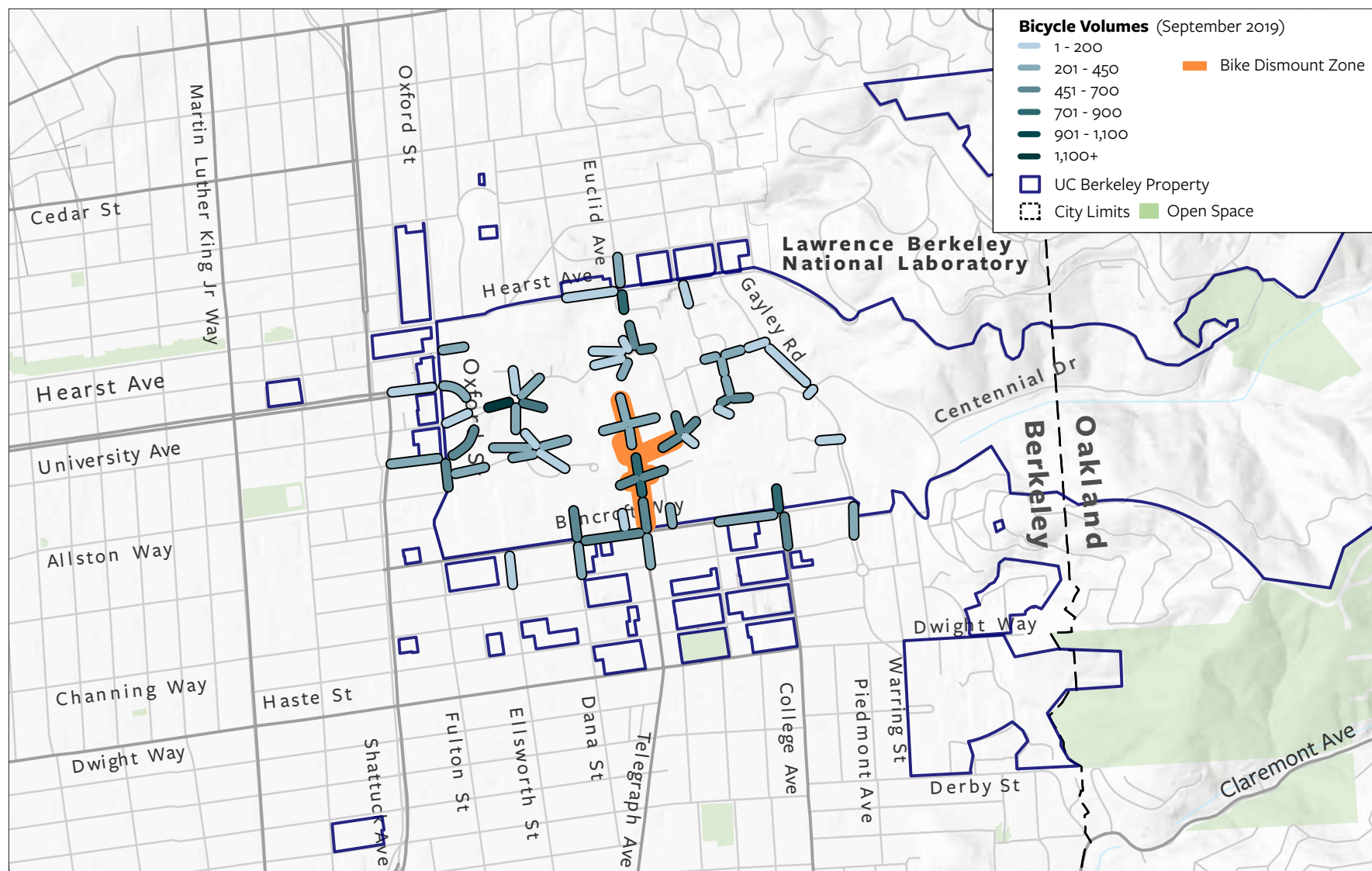


Figure 5.15-5

UC Berkeley Campus Existing Bicycle Network

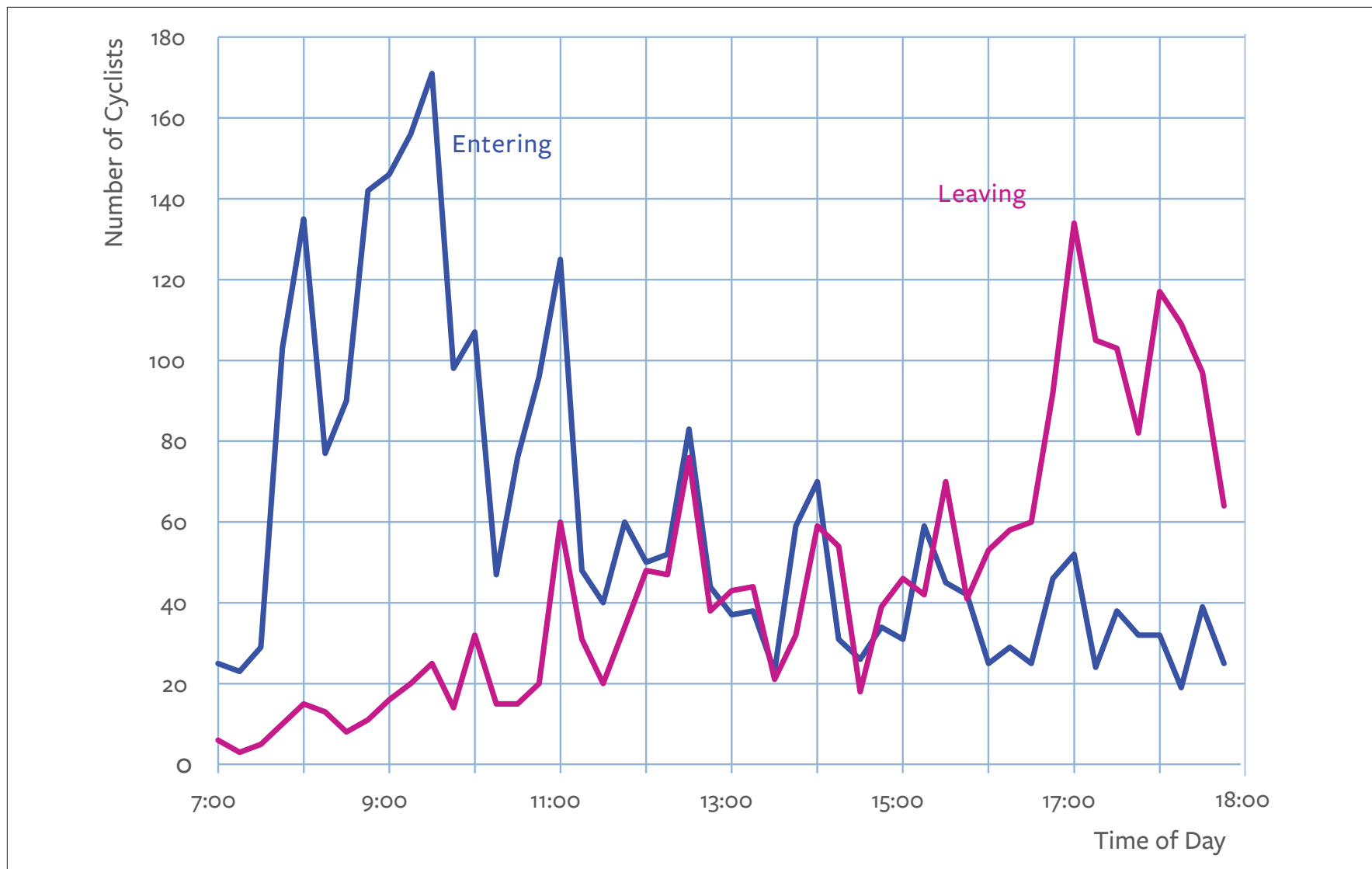


Source: Fehr & Peers, 2021.



Figure 5.15-6

Existing Bicycle Volumes by Location



Source: Fehr & Peers, 2021.

Figure 5.15-7

Bicycle Activity by Time of Day (Bicyclists Entering and Leaving Campus Park)

Vehicle Circulation

Limited public motor vehicle access is provided throughout the Campus Park. A few locations, such as University Drive/West Crescent and Frank Schlessinger Way at Oxford Street; Barrow Lane at Bancroft Way; and Optometry Lane, South Drive, and University Drive at Gayley Road allow public motor vehicles to enter the Campus Park to access parking facilities or pick-up/drop off areas. University Drive extends across the Campus Park, although a gate near Moffitt Library limits public motor vehicle access across the Campus Park. Public motor vehicle access is limited within the Campus Park, with the exception of service/delivery and emergency vehicle access provided within the Campus Park via the internal street system.

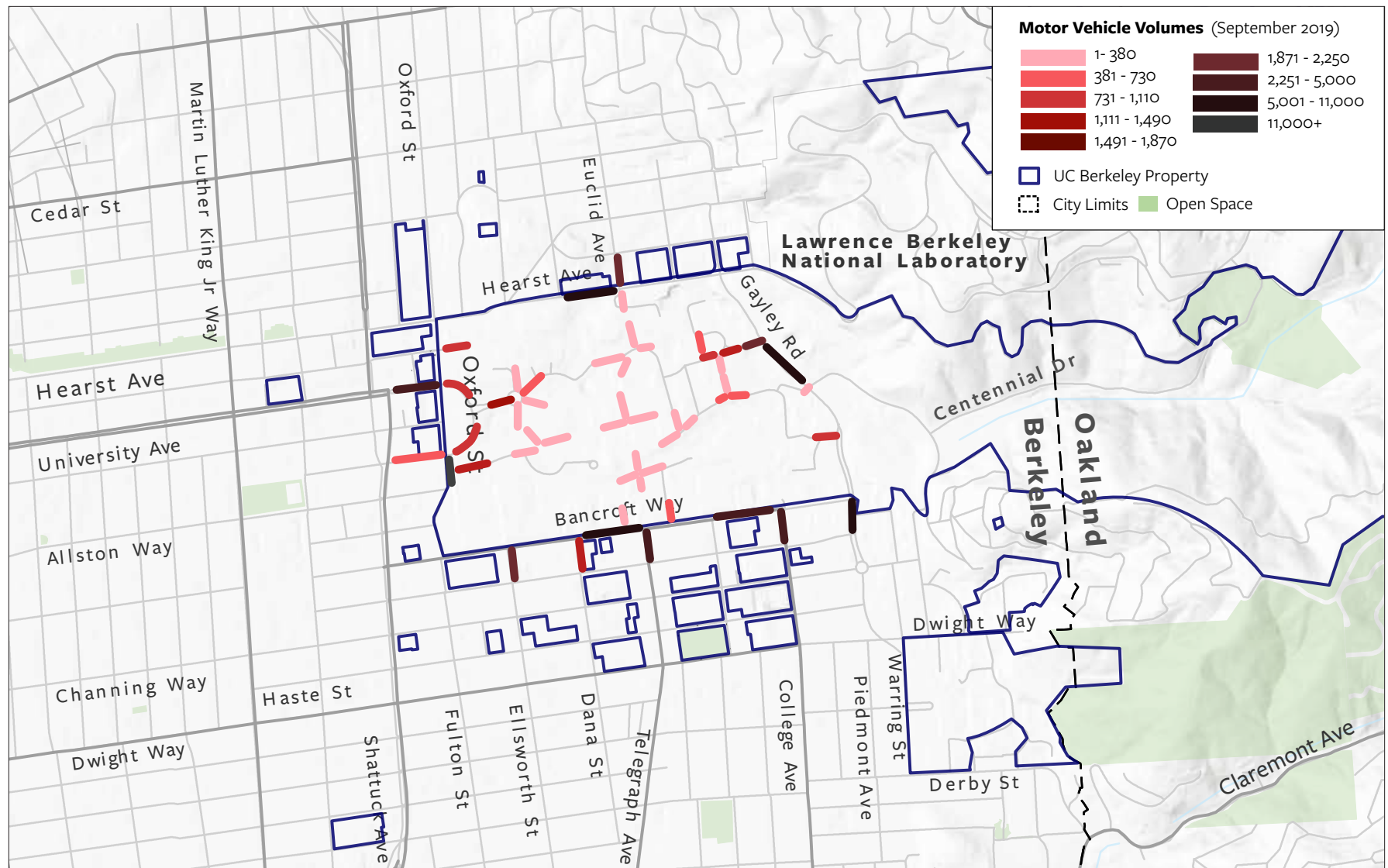
Motor vehicle access to the Hill Campus East is limited to Centennial Drive, which provides access to the Hill Campus East facilities and connects with Grizzly Peak Boulevard. Similar to the Campus Park, the Clark Kerr Campus provides limited motor vehicle access. Motor vehicle access in the Clark Kerr Campus is provided through the Horseshoe Drive at Warring Street, North Street at Dwight Way, and Sports Lane, which extends near the east side of the Clark Kerr Campus between Dwight Way and Derby Street.

Figure 5.15-8, Existing Vehicle Volumes by Location, shows the existing (fall 2019) vehicle volumes at the Campus Park gateways and within the Campus Park. The volumes cover the period from 7:00 a.m. to 7:00 p.m. About 7,400 vehicles enter and leave the Campus Park during this period. The University Drive/Gayley Road access point is the most heavily used on the Campus Park, with about 1,900 vehicle trips. West Crescent is the second-highest entry/exit, with about 1,300 vehicles over the 12-hour period. The highest traffic volume along the Campus Park frontage is on Oxford Street, which has about 15,000 vehicles from 7:00 a.m. to 7:00 p.m.

Loading

Loading conditions were observed to be greatest along the Campus Park perimeter, compared to other areas. Observations were made along the perimeter of both service vehicle and passenger loading activity. Curb designations on the Campus Park perimeter are presented in Figure 5.15-9, Campus Park Perimeter Curb Designations. There are four designated loading zones along the periphery of the Campus Park: three along Bancroft Avenue (near Spieker Plaza, Eshleman Hall, and Sproul Hall) and one along Piedmont Avenue near Optometry Lane. On-street parking and “No Parking” zones exist along the peripheral roadways. These zones are also used for pick-up and drop-off activity, though the use of “No Parking” zones is prohibited by the California Vehicle Code.

Based on the 2019 UC Berkeley Transportation Survey, approximately 2 percent of people commuting to and from the UC Berkeley campus were either dropped off or used ride hailing services, also known as Transportation Network Companies (TNCs). TNC activity was observed at various locations around the Campus Park on a weekday in September 2019 to better understand pick-up and drop-off activity near or in the Campus Park. The location of pick-up and drop-off points for the primary ride hailing services (i.e., Uber and Lyft) are summarized below and presented in Figure 5.15-10, Existing TNC Activity.



Source: Fehr & Peers, 2021.

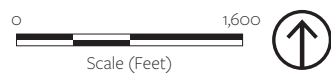
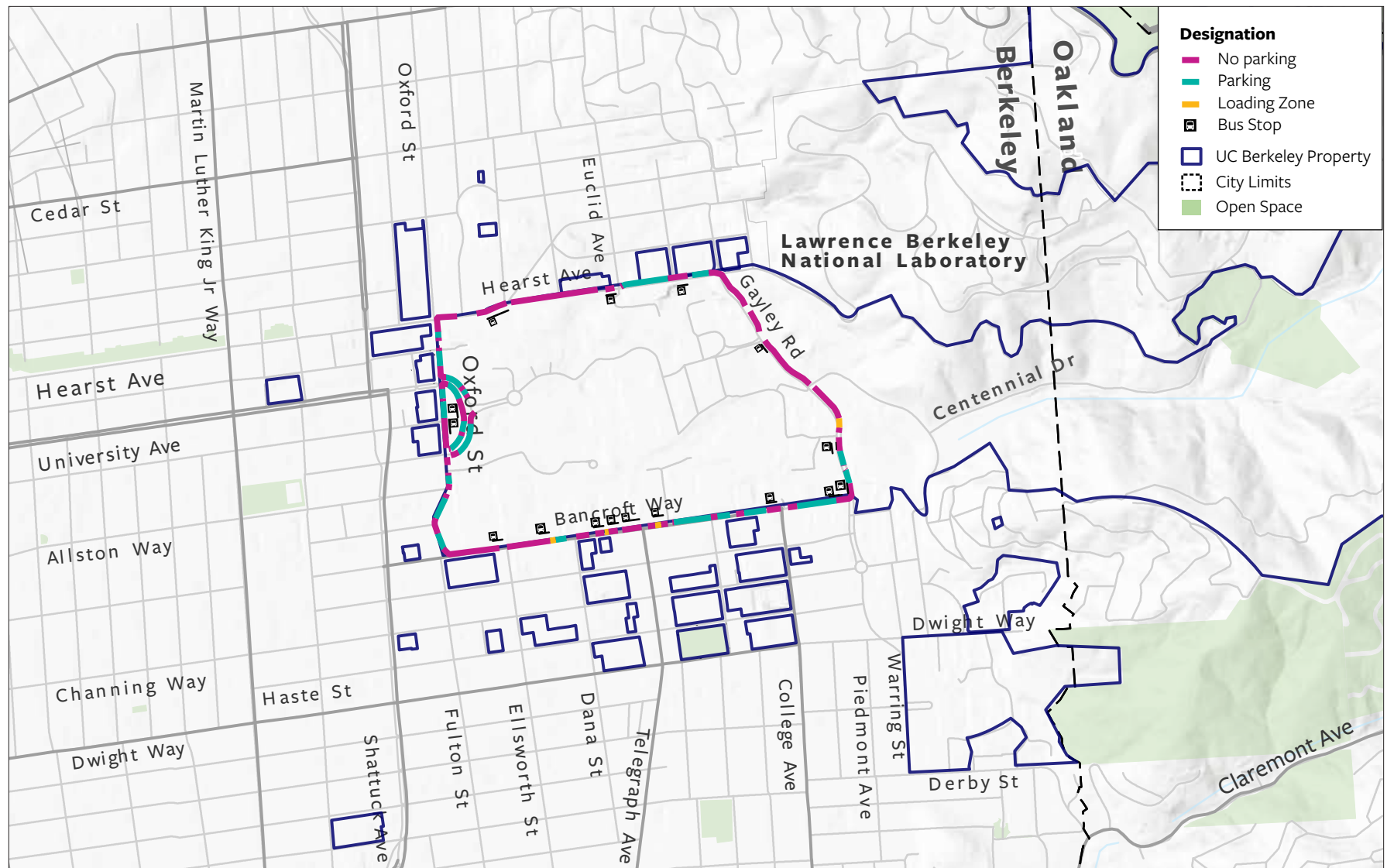


Figure 5.15-8

Existing Vehicle Volumes by Location



Source: Fehr & Peers, 2021.

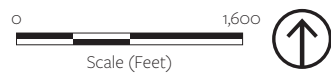
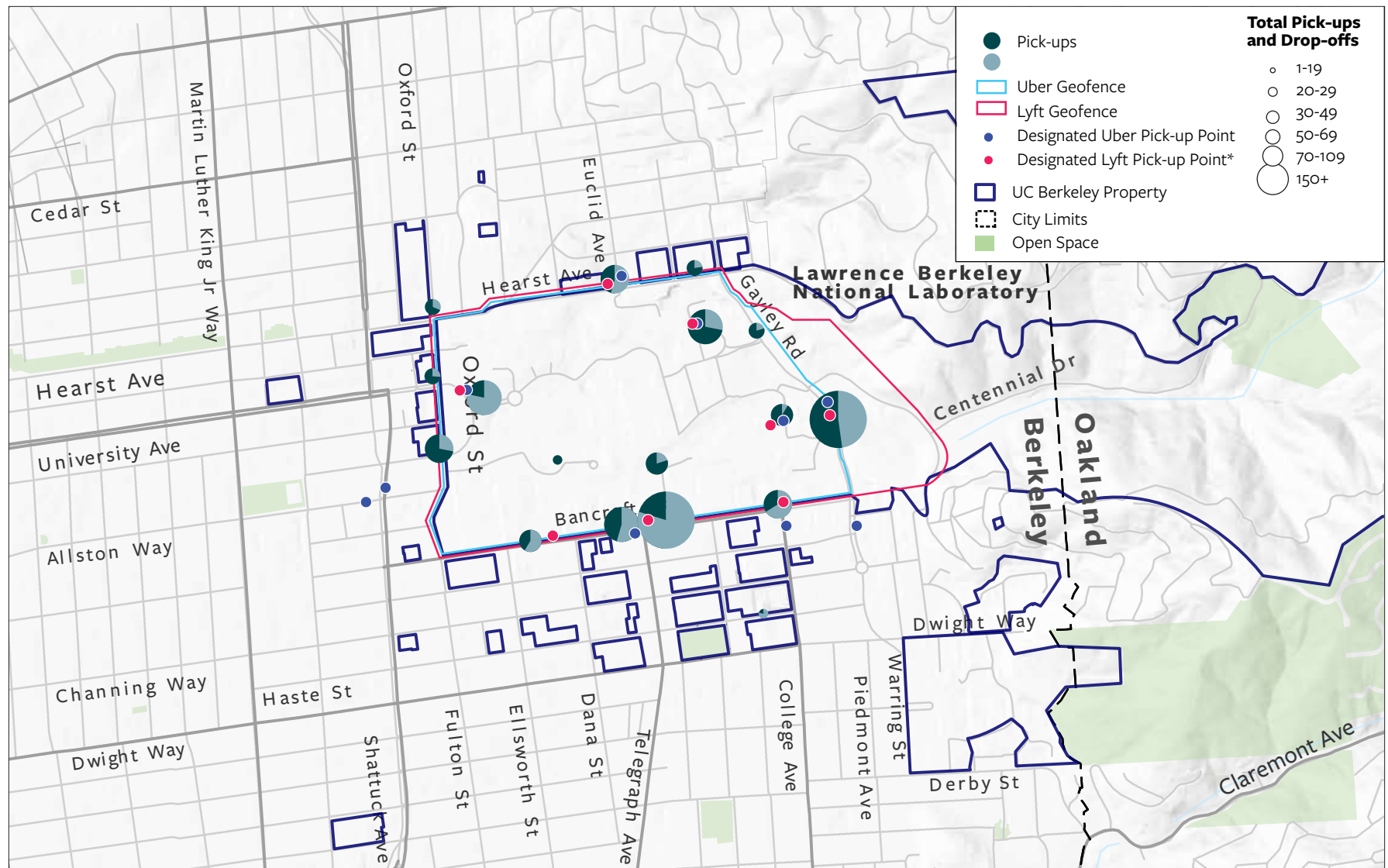


Figure 5.15-9

Campus Park Perimeter Curb Designations



Source: Fehr & Peers, 2021.

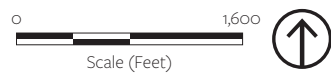


Figure 5.15-10
Existing TNC Activity

The data from the TNC observations in September 2019 revealed that:

- About 1,100 TNC pick-ups and drop-offs occurred between 7:00 a.m. and 10:00 p.m.
- 53 percent of TNC activity occurred at the campus-designated pick-up/drop-off points.
- 15 percent of TNC activity occurred within the geofenced areas (21 percent of drop-offs).
- 12 percent of TNC activity occurred in red zones along the Campus Park periphery.
- 10 percent of TNC activity occurred via double-parking maneuvers along the Campus Park periphery.
- 31 percent of TNC activity occurred within the Campus Park.
- Pick-ups and drop-offs were greatest at Haas School (17 percent), Sproul Plaza (14 percent), Mining Circle (9 percent), and West Gate (7 percent).
- 82 percent of rides have one passenger.
- Average drop-off event lasts 19 seconds and average pick-up event lasts 46 seconds.

The data revealed that different modes of travel compete for limited curb space, which means curb management is important for safety (e.g., ensuring visibility at crosswalks) and to support different modes of travel.

Emergency Vehicle Access

Roadways allow emergency vehicles to travel at higher speeds and permit other traffic to maneuver out of the path of the emergency vehicle, as required by California Vehicle Code. Most traffic signals in the vicinity of the Campus Park also have “emergency vehicle preemption,” which allows priority for emergency vehicles approaching a signalized intersection. The Berkeley Fire Department stations that serve the UC Berkeley campus and are less than a mile from the Campus Park edge include:

- Berkeley Fire Station 2 located at 2029 Berkeley Way.
- Berkeley Fire Station 3 located at 2710 Russell Street.
- Berkeley Fire Station 5 located at 2680 Shattuck Avenue.

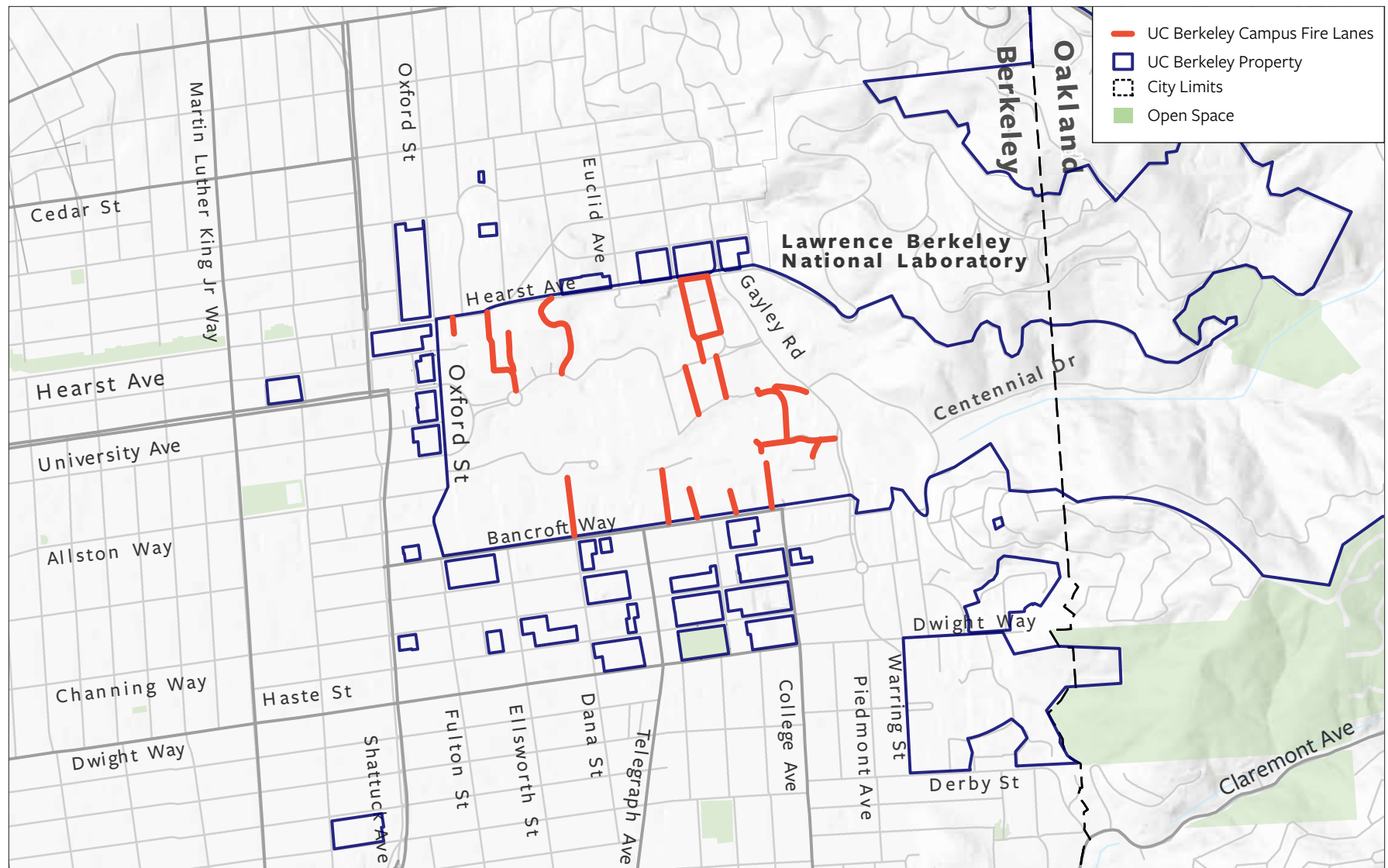
There is also an Alameda County Fire Station at the Lawrence Berkeley National Laboratory.

UC Berkeley maintains emergency vehicle access lanes onto and through the Campus Park. Figure 5.15-11, Existing Campus Park Fire Access Routes, shows the current fire access routes to within the Campus Park.

Existing Vehicle Miles Traveled

Vehicle miles traveled, or VMT, refers to the amount and distance of automobile travel attributable to a project. In 2013, SB 743 was signed into law, which added Public Resources Code Section 21099 to CEQA, changing the way that transportation impacts are analyzed under CEQA to better align local environmental review with statewide objectives to reduce greenhouse gas (GHG) emissions, encourage infill mixed-use development in designated priority development areas, reduce regional sprawl development, and reduce VMT in California.⁷

⁷ *Technical Advisory on Evaluating Transportation Impacts in CEQA*. (2018). Sacramento, CA: Governor’s Office of Planning and Research, California.



Source: Fehr & Peers, 2021.

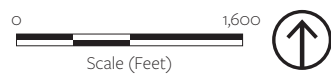


Figure 5.15-11

Existing Campus Park Fire Access Routes

Increased VMT leads to several direct and indirect impacts on the environment and human health. Among other effects, increasing VMT on the roadway network leads to increased emissions of air pollutants, including GHGs, as well as increased consumption of energy. Transportation is associated with more GHG emissions than any other sector in California. As documented in the City of Berkeley Climate Action Plan and Resilience Update,⁸ 59 percent of Berkeley's sector-based GHG emissions are produced by transportation and land use. (This analysis did not include UC Berkeley GHG emissions.) Making transportation more efficient by reducing VMT per capita is the most effective means to reduce GHG emissions per capita.

The VMT analysis in this section uses information specific to the UC Berkeley campus to estimate UC Berkeley-generated VMT, and the Alameda CTC travel demand model to estimate regional VMT. For purposes of transportation analysis, the home-work VMT generated by commuters and all home-based VMT generated by UC Berkeley campus residents is assessed. Table 5.15-5, Baseline UC Berkeley VMT Summary, shows the existing UC Berkeley campus VMT, and Table 5.15-6, Baseline UC Berkeley VMT Rates and Regional VMT Rates, compares the UC Berkeley campus VMT per commuter and VMT per resident rates to the nine-county Bay Area average values. The current UC Berkeley campus (2019) generates VMT at rates that are substantially below the City of Berkeley thresholds of significance for VMT. The VMT analysis methodology and significance thresholds are discussed in Section 5.15.2, Standards of Significance.

TABLE 5.15-5 BASELINE UC BERKELEY VMT SUMMARY

Population	Number ^a	Daily VMT Rate	Rate per	VMT Type	Baseline Daily VMT
Commuters					
Staff	12,145	14.50	Commuter	Home-work trips	172,062
Faculty	3,244	5.86	Commuter	Home-work trips	19,011
Graduate Students	9,526	2.12	Commuter	Home-work trips	20,193
Undergraduate Students	21,210	1.46	Commuter	Home-work trips	31,071
Total	46,125				246,338
Residents					
Faculty	32	7.60	Residential Unit	Home-based trips	243
Graduate Students	250	0.60	Bed	Home-based trips	150
Undergraduate Students	8,722	0.60	Bed	Home-based trips	5,233
Total Residential VMT	9,004				5,626
Total VMT					251,964

Note:

a. This table only includes UC Berkeley housing in the EIR Study Area and does not include the existing 16 beds on the Housing Project #1 site, housing outside of the EIR Study Area (including University Village), some affiliate housing, or housing that UC Berkeley provides through a master lease agreement.

Source: Fehr & Peers, 2020.

⁸ *Climate Action Plan and Resilience Update*. (July 21, 2020, Special Meeting Item 05). Berkeley, CA: Office of the City Manager. https://www.cityofberkeley.info/Clerk/City_Council/2020/07_Jul/Documents/2020-07-21_Special_Item_05_Climate_Action_Plan_pdf.aspx

TABLE 5.15-6 BASELINE UC BERKELEY VMT RATES AND REGIONAL VMT RATES

	Existing Campus Metrics		
	Metric 1	Metric 2	Metric 3
	Daily Home-Work VMT per Faculty, Staff and Student Population	Daily Home-Based VMT per Resident Student	Daily Home-Based VMT per Resident Faculty
VMT	246,338	5,383	243
Population	46,125	8,972	32
VMT/Population	5.34	0.60	7.60
Regional Average VMT/Population	18.1	19.8	19.8
Threshold: 15% Below Regional Average	15.4	16.9	16.9
Threshold met under Existing Conditions?	Yes (5.34 < 15.4)	Yes (0.60 < 16.9)	Yes (7.60 < 16.9)

Source: Fehr & Peers, 2020.

Parking

Although parking is not considered in determining if a project has the potential to result in significant environmental impacts under CEQA, this section presents information regarding the existing parking supply in relation to the parking demand, both on- and off-street facilities, for context and for informational purposes.

UC Berkeley Parking

UC Berkeley parking is officially enforced seven days a week between 5:00 a.m. and 2:00 a.m.; in common practice, enforcement occurs between 7:00 a.m. and 10:00 p.m. Monthly parking permits are available for faculty, staff, and students. Permit costs vary depending on location and whether the permit is for a student or faculty/staff.

Monthly parking permit costs, as of Spring 2020, are:

- Central Campus (C) = \$155
- Faculty/Staff (F) = \$112
- Student (S) = \$98
- Hill (H) = \$83

UC Berkeley parking is located at several locations within and adjacent to the Campus Park as well as at the Clark Kerr Campus, Hill Campus East, Hill Campus West, and other off-campus facilities. A total of 6,200 parking spaces are available for permit holders in a combination of on-street parking, surface lot parking, structure parking, and underground parking. Of the 6,200 spaces, 4,700 serve the Campus Park; the other 1,500 serve the Clark Kerr Campus, the Hill Campus East, the Hill Campus West, and other locations.

Figure 5.15-12, Existing UC Berkeley Parking Facilities, shows the existing (2019) permit parking locations, and Figure 5.15-13, Existing UC Berkeley Parking Occupancies, shows the 2019 parking occupancy rates.

Parking occupancy in 2019 was at or near capacity in the Campus Park and the parking locations within three blocks of the Campus Park, an indication that there is limited available parking for the Campus Park. Parking was available at the Clark Kerr Campus, the Hill Campus East, and the Hill Campus West. The parking occupancy imbalances between the Campus Park and the other zones is an indication that it is not convenient for Campus Park faculty, staff, and students to park at the other zones.

Non-UC Berkeley Parking

Parking is also available via on-street spaces in the City of Berkeley as well as in public and private parking facilities, including Stadium Garage near Memorial Stadium. In private parking facilities patrons can purchase monthly parking passes for unreserved or reserved parking. Private parking passes, when available at a facility, range from \$130 to \$350 per month.⁹ Private parking is also available in homes or other places (e.g., businesses) near the UC Berkeley campus and can be leased individually for about \$125 to \$180 per month.¹⁰

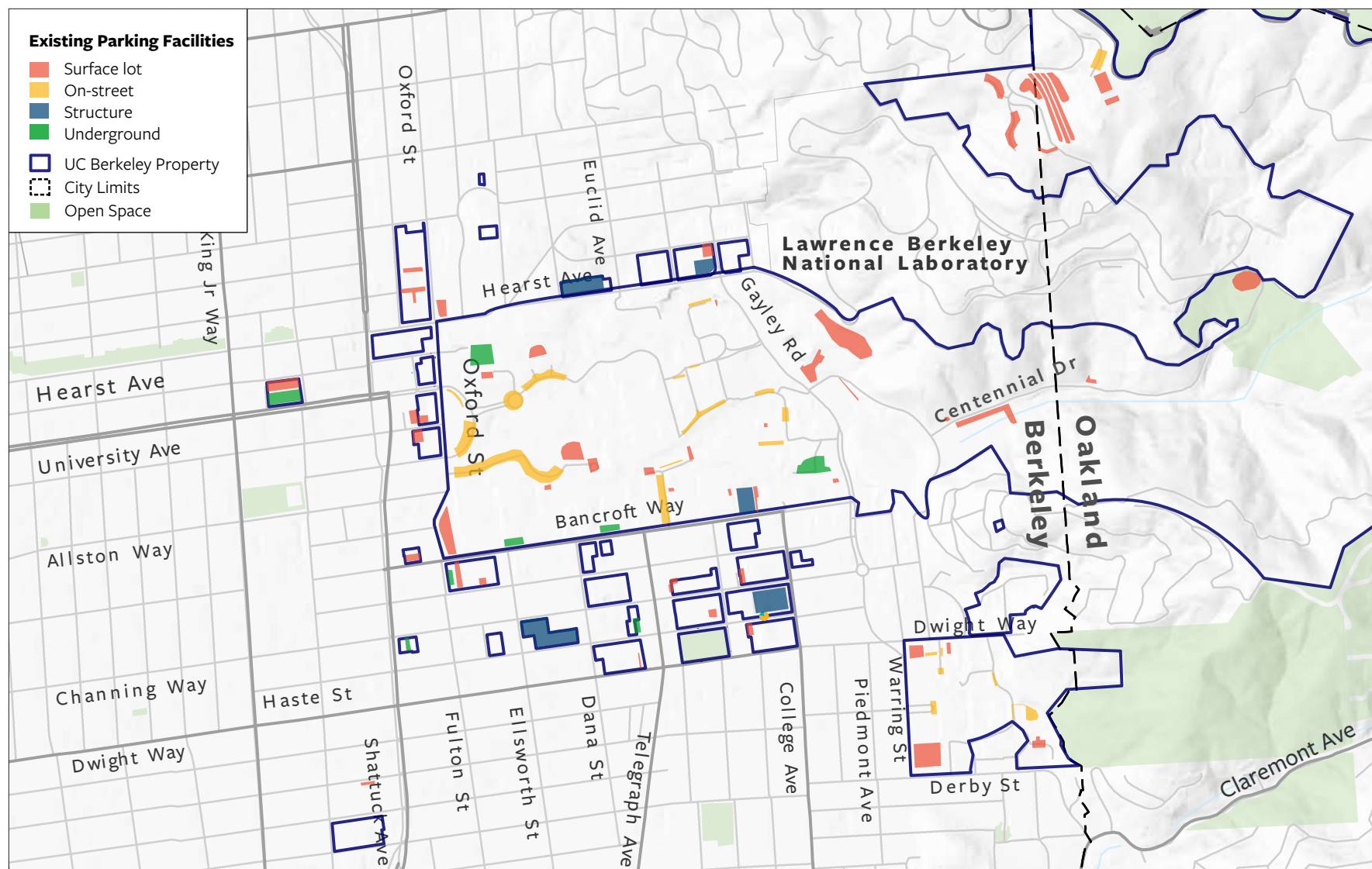
Most of the on-street parking near the UC Berkeley campus is limited to two hours or less for visitors, either due to Berkeley's residential permit program zones or to parking meters or signs that limit parking duration. The residential permit program gives residents living in designated zones the option to purchase a permit for parking on the streets of that zone; residents of UC Berkeley housing located in permit zones are not eligible for residential permit program. Nonresidents and residents who do not purchase a permit are generally limited to on-street parking for no more than two hours between 8:00 a.m. and 7:00 p.m. on weekdays. Some zones also have Saturday enforcement. Parking meters, generally in the commercial areas, are enforced between 9:00 a.m. and 6:00 p.m. on weekdays and Saturdays, with the time limits and enforcement intended to encourage parking turnover for visitors to the area and discourage all-day use by employees and commuters.

Wind Conditions

Wind direction refers to the direction from which the wind is moving. Thus, a westerly or west wind moves from west to east. As described in Chapter 5.2, Air Quality, of this Draft EIR, during the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais in Marin County, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San José when it meets the East Bay Hills.

⁹ Monthly costs at parking facilities near the UC Berkeley campus in October 2019, including \$130 per month at the Stadium Garage and \$350 per month for a reserved space at the Allston Way Garage.

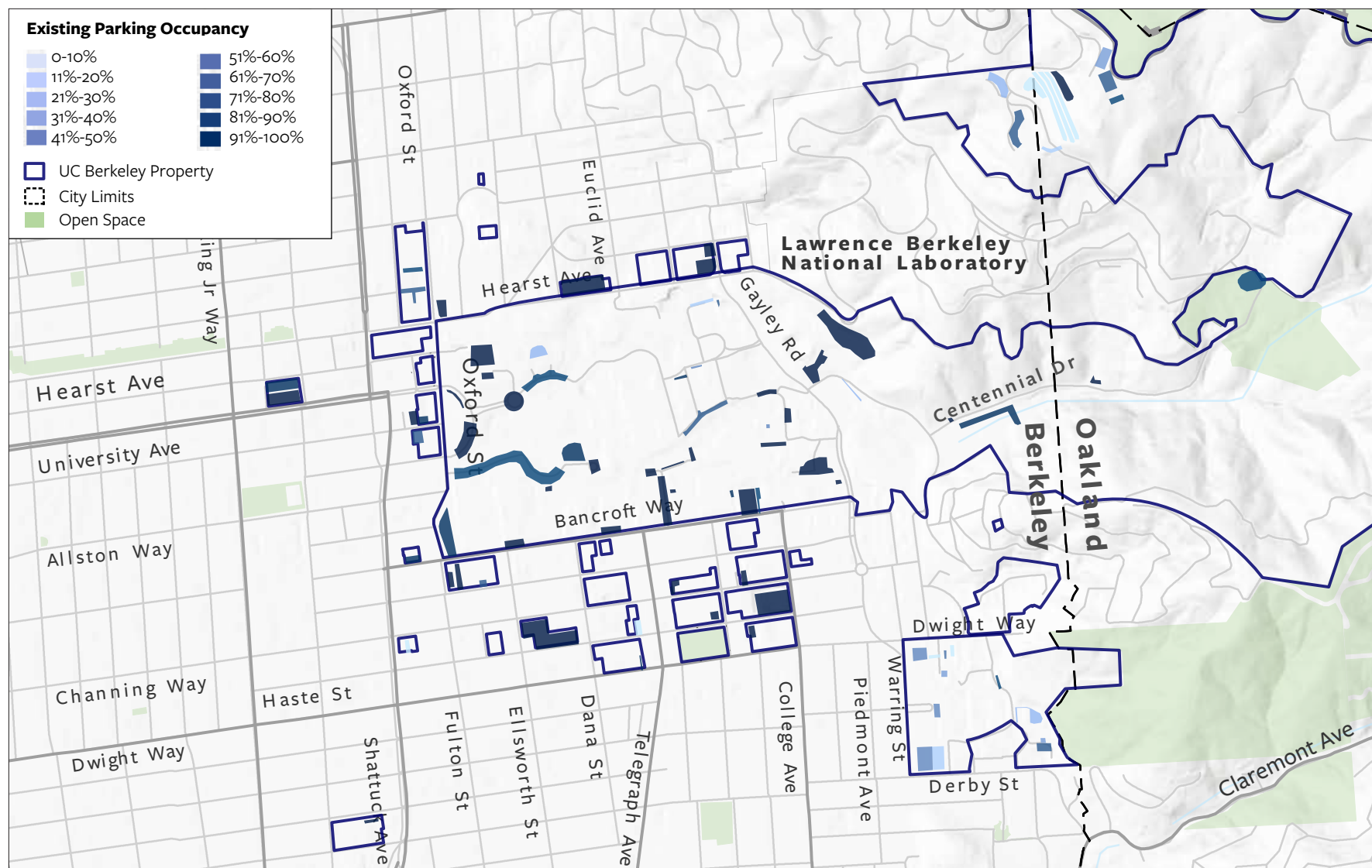
¹⁰ Based on private parking spaces for lease in the vicinity of the UC Berkeley campus on Craigslist.com in October 2019.



Source: Fehr & Peers, 2021.



Figure 5.15-12
Existing UC Berkeley Parking Facilities



Source: Fehr & Peers, 2021.



Figure 5.15-13

Existing UC Berkeley Parking Occupancies

Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno Gap. The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon, and the sea breeze deepens and increases in velocity while spreading inland. Under normal atmospheric conditions, the air in the lower atmosphere is warmer than the air above it. In the winter, the San Francisco Bay area frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes (i.e., conditions where there is little mixing, which occurs when there is a lack of or little wind) are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the San Francisco Bay Area Air Basin. The annual average wind speed measured at Alameda Naval Air Station is 7.7 miles per hour, and ambient wind (undisturbed by buildings) in the city of Berkeley seldom exceeds 36 miles per hour.¹¹

5.15.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant transportation impact if it would:

1. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
2. Conflict or be inconsistent with CEQA Guidelines 15064.3, subdivision (b).¹²
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
4. Result in inadequate emergency access.
5. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

Methodology

This section describes the analysis techniques, assumptions, and results used to identify impacts of the LRDP on the transportation system. Transportation impacts are described and assessed, and mitigation measures are recommended for impacts identified as significant or potentially significant.

The following methodologies were used to evaluate impacts of the project.

¹¹ Donald Ballanti, Consulting Meteorologist, 2014, Wind and Comfort Impact Analysis, January, pages 3 and 4, prepared for the 2211 Harold Way Mixed Use Project Environmental Impact Report, State Clearinghouse Number 2014052063, certified December 8, 2015.

¹² CEQA Guidelines Section 15064.3, subdivision (b) refers to the discontinuation of vehicle level of service (LOS) as an impact metric for transportation analysis and instead recommends the use of vehicle miles traveled (VMT); this section gives lead agencies discretion to choose the most appropriate methodology to evaluate a project's VMT.

Consistency with Programs, Plans, Ordinances, or Policies Addressing Roadway, Transit, Bicycle, and Pedestrian Facilities

The proposed LRDP Update would include several improvements to the existing roadways on the UC Berkeley campus, bicycle, and pedestrian circulation networks, and transit-supportive improvements, that would serve students, faculty, staff, and visitors accessing the Campus Park by car, bus, shuttle, bicycling, and walking. The analysis of potential conflicts with applicable planning efforts related to roadway, transit, bicycle, and pedestrian facilities was based on an assessment of other programs, plans, policies, or ordinances with which the proposed LRDP Update and, through its implementation, proposed facilities under the proposed LRDP Update would interact.

Consistency with CEQA Guidelines Section 15064.3 Subdivision (b) (Vehicle Miles Traveled)

CEQA transportation significance criteria 2 cites CEQA Guidelines Section 15064.3, subdivision (b). This subdivision follows, and the criteria for analyzing transportation impacts includes:

1. **Land Use Projects.** VMT exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease VMT in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.
2. **Transportation Projects.** Transportation projects that reduce, or have no impact on, VMT should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.
3. **Qualitative Analysis.** If existing models or methods are not available to estimate the VMT for the project being considered, a lead agency may analyze the project's VMT qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.
4. **Methodology.** A lead agency has discretion to choose the most appropriate methodology to evaluate a project's VMT, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's VMT and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate VMT and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

In its simplest form, VMT is a measure of the number of daily vehicle trips multiplied by their trip lengths. VMT is an accessibility performance metric that evaluates the effect that changes in land use patterns, regional transportation systems, and other built environment characteristics have on roadway travel. The

land use changes associated with the proposed LRDP Update would affect the VMT generated by UC Berkeley affiliates and the total VMT within the region.

The Technical Advisory provides specific guidance on how office or similar employment-based uses and residences can be assessed for VMT impacts. Based on this guidance, the transportation impact analysis of the proposed LRDP Update in this Draft EIR assesses the VMT generated by commuters (home-work trips) and UC Berkeley residents (all home-based trips). UC Berkeley functions as a workplace for faculty, staff and students, and a residence for many students and some faculty; it has unique travel characteristics that are well defined via UC Berkeley transportation surveys, traffic counts, UC Berkeley population home residence data, and StreetLight data (aggregated anonymized Global Positioning System or GPS device data that can be used to describe trip length characteristics and, along with other sources, trip generation characteristics). Because this reliable project-specific data is available, the project-generated VMT metrics are calculated directly using the above data sources instead of the Alameda CTC Model. The Alameda CTC Model is used to provide regional VMT metrics for comparison to UC Berkeley metrics.

The following sections describe screening criteria relevant to the proposed LRDP Update and Housing Projects #1 and #2, the analysis metrics, analysis methodology, and thresholds of significance used in this assessment.

Screening Criteria

The Technical Advisory cites CEQA Guidelines Section 15064.3, subdivision (b)(1), which states that:

...generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact [with respect to VMT].

The Technical Advisory also cites the definitions of major public transit stop and high-quality transit corridor:

- **Public Resources Code Section 21064.3.** ‘Major transit stop’ means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.
- **Public Resources Code Section 21155.** For purposes of this section, a ‘high-quality transit corridor’ means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

The Technical Advisory also notes that the presumption of a less-than-significant impact with respect to VMT may not apply if project-specific or location-specific information indicates that the project will still generate significant levels of VMT. For example, the presumption might not be appropriate if the project:

- Has a floor area ratio of less than 0.75.
- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking).

- Is inconsistent with the applicable sustainable communities strategy (as determined by the lead agency, with input from the metropolitan planning organization).
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

VTM Metrics

Baseline Metrics

The following metrics are calculated for existing (2018–19 academic year) conditions and for the proposed LRDP Update (i.e., for UC Berkeley with the expected increase in student, faculty, and staff commuters, and the expected increase in UC Berkeley resident students and faculty, with the proposed LRDP Update):

1. Commuter students, faculty, and staff:
 - Daily Home-Work VMT
 - Daily Home-Work VMT per commuter
2. UC Berkeley resident students:
 - Daily Home-Based VMT
 - Daily Home-Based VMT per resident student
3. UC Berkeley resident faculty:
 - Daily Home-Based VMT
 - Daily Home-Based VMT per resident faculty
4. UC Berkeley students (consists of all commuter students plus all UC Berkeley resident students):
 - Daily Home-Based VMT (for UC Berkeley residents) plus Daily Home-Work VMT (for commuters)
 - Daily Home-Based VMT (for UC Berkeley residents) plus Daily Home-Work VMT (for commuters) per all students
5. UC Berkeley faculty and staff (consists of all commuter faculty and staff plus all UC Berkeley resident faculty):
 - Daily Home-Based VMT (for UC Berkeley residents) plus Daily Home-Work VMT (for commuters)
 - Daily Home-Based VMT (for UC Berkeley residents) plus Daily Home-Work VMT (for commuters) per all faculty and staff
6. UC Berkeley students, faculty and staff (consists of all commuter students, faculty, and staff plus all UC Berkeley resident students and UC Berkeley resident faculty—also known as “service population”):
 - Daily Home-Based VMT (for UC Berkeley residents) plus Daily Home-Work VMT (for commuters)
 - Daily Home-Based VMT (for UC Berkeley residents) plus Daily Home-Work VMT (for commuters) per all students, faculty and staff

Cumulative Metrics

Metrics 1 through 6 are assessed for the UC Berkeley campus under cumulative conditions, including adjustments to reflect UC Berkeley and regional travel characteristics in the cumulative year (2040).

VTM Significance Thresholds

The following thresholds of significance reflect the high standards UC Berkeley has achieved in limiting VMT, and hold the proposed LRDP Update to that standard. While developed specifically for UC Berkeley, the thresholds prioritize consistency with OPR's guidance in the Technical Advisory.

The thresholds are numbered corresponding to metrics 1 through 6, above.

Baseline VMT Significance Thresholds

- **Threshold B1.** Project VMT per commuter at least 15 percent below regional baseline VMT per employee.¹³
- **Threshold B2.** Project VMT per UC Berkeley resident student at least 15 percent below regional baseline VMT per resident.
- **Threshold B3.** Project VMT per UC Berkeley resident faculty at least 15 percent below regional baseline VMT per resident.
- **Threshold B4.** Project student VMT per student no worse than UC Berkeley baseline.
- **Threshold B5.** Project faculty/staff VMT per faculty/staff no worse than UC Berkeley baseline.
- **Threshold B6.** Project student/faculty/staff VMT per service population no worse than UC Berkeley baseline.

Cumulative VMT Significance Thresholds

- **Threshold C1.** Project VMT per commuter at least 15 percent below regional cumulative (2040) VMT per employee.
- **Threshold C2.** Project VMT per UC Berkeley resident student at least 15 percent below regional cumulative (2040) VMT per resident.
- **Threshold C3.** Project VMT per UC Berkeley resident faculty at least 15 percent below regional cumulative (2040) VMT per resident.
- **Threshold C4.** Project student VMT per student no worse than UC Berkeley baseline.
- **Threshold C5.** Project faculty/staff VMT per faculty/staff no worse than UC Berkeley baseline.
- **Threshold C6.** Project student/faculty/staff VMT per service population no worse than UC Berkeley baseline.

VTM Calculation Methodology

The regional VMT metrics, used for comparison to UC Berkeley metrics, were taken from the Alameda CTC Countywide Travel Demand Model (Alameda CTC Model). The baseline year for the model is 2020.

Baseline VMT Calculation Methodology

The commuter VMT (Home-Work) and VMT per commuter consists of VMT generated by vehicle trips between homes and workplaces by private motor vehicles (including drive-alone, carpool, drop-off, and TNC) and was calculated using the following inputs:

- Student, faculty, and staff commuting population (2018–19 and proposed LRDP Update growth).

¹³ Regional refers to the nine-county Bay Area.

- Driving mode (drive-alone, carpool, pick-up/drop off, and TNC) shares for each group from the UC Berkeley 2019 Transportation Survey.
- Average trip lengths for current commuter faculty and staff derived from UC Berkeley’s anonymized home residence database.
- Average trip lengths for current commuter students derived from UC Berkeley’s anonymized student employee home residence database.

The UC Berkeley resident student VMT and VMT per resident student consists of VMT generated by a residential use by private motor vehicles (including drive-alone, carpool, drop-off, and TNC) and was calculated using the following inputs:

- UC Berkeley resident student populations (2018–19 and proposed LRDP Update growth).
- Vehicle trip generation rates per resident student derived from the Institute of Transportation Engineers Trip Generation (10th edition) rates for multifamily housing, adjusted using the US Census data on driving mode shares for the Berkeley Southside area and trip lengths derived from the Alameda CTC Model for traffic analysis zones in the southside area (where most student housing is currently located).
- Data on TNC drop-offs and pick-ups in the vicinity of Housing Project #2 and data on student vehicle residential parking permit sales.

The UC Berkeley resident faculty VMT and VMT per resident faculty was calculated using the following inputs:

- UC Berkeley resident faculty populations (2018–19 and proposed LRDP Update growth).
- Home-based VMT per resident rates from the Alameda CTC Model for the traffic analysis zone containing the existing faculty housing, adjusted to reduce the VMT by the trip to/from the UC Berkeley campus by the resident faculty member.

Cumulative VMT Calculation Methodology

The regional VMT metrics for the cumulative case were taken from the Alameda CTC Model for the year 2040. The UC Berkeley VMT metrics for the cumulative case were calculated similarly to the baseline VMT metrics.

Key LRDP Update Inputs for VMT Calculations

Table 5.15-7, Population and Beds Summary, summarizes the population and housing under existing conditions (2018–19), with the proposed LRDP Update, and the net change. Table 5.15-8, Commuters and Residents Summary, translates this information into commuters and UC Berkeley residents. The proposed LRDP Update would result in a net reduction in student commuters, because the proposed increase in the number of student beds would exceed the projected enrollment increases. Overall, the commuting population would increase by 449 commuters, and the UC Berkeley resident population would increase by 12,071 residents, including 9,008 new undergraduate residents, 2,065 new graduate student residents, and 549 new faculty residents.

TABLE 5.15-7 POPULATION AND BEDS SUMMARY

	Existing	LRDP Update Buildout	Net Change
Total Employees	15,421	19,000	3,579
Faculty	3,276	4,200	924
Staff	12,145	14,800	2,655
Students	39,700	48,200	8,492
Undergraduate Students	29,932	35,000	5,068
Graduate Students	9,776	13,200	3,424
UC Berkeley Student Beds	8,972	20,045	11,073
Undergraduate Students	8,722	17,730	9,008
Graduate Students	250	2,315	2,065
UC Berkeley Faculty Beds	32	581	549
Nonuniversity Beds	16	125	109

Source: UC Berkeley, summarized by Fehr & Peers, 2020.

TABLE 5.15-8 COMMUTERS AND RESIDENTS SUMMARY

	Existing	LRDP Update Buildout	Net Change
Commuters			
Faculty	3,244	3,619	375
Staff	12,145	14,800	2,655
Undergraduate students	21,210	17,270	-3,940
Graduate students	9,526	10,885	1,359
Total Commuters	46,125	46,574	449
Residents by Bed Count			
Faculty	32	581	549
Undergraduate students	8,722	17,730	9,008
Graduate students	250	2,315	2,065
Total Residents by Bed Count ^a	9,004	20,626	11,622
Total Population ^a	55,129	67,200	12,071
Nonuniversity Population	16	+125 / -16	109

Notes:

a. Does not include population in nonuniversity housing 16 beds at Housing Project #1 site, which will be demolished, and 125 new affordable and supportive housing beds to be included in Housing Project #2.

Source: UC Berkeley, summarized by Fehr & Peers, 2020

Roadway Design Hazards

As noted above, the proposed LRDP Update includes campuswide roadway, bicycle, and pedestrian network changes, and UC Berkeley has not progressed to the stage of developing preliminary engineering designs (with the exception of Housing Projects #1 and #2). As a result, the evaluation of potential hazards for the proposed LRDP Update is based on a review of applicable regulations and guidance, including documents

published by the University of California Office of the President and Caltrans, that would inform and dictate the manner in which transportation network improvements and changes under the proposed LRDP Update would occur. For Housing Projects #1 and #2, current project designs are described with respect to the applicable design standards.

Emergency Access

As described above, the proposed LRDP Update includes roadway, bicycle and pedestrian network changes, and UC Berkeley has not progressed to the stage of developing preliminary engineering designs (with the exception of Housing Projects #1 and #2). As a result, the evaluation of the adequacy of emergency access in the proposed LRDP Update is based on a review of applicable regulations and guidance, including documents published by the University of California Office of the President and the City of Berkeley that would inform and dictate the manner in which emergency access to the UC Berkeley campus would be maintained. For Housing Projects #1 and #2, the current project designs are described with respect to the applicable design standards.

5.15.3 IMPACT DISCUSSION

TRAN-1	The proposed project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
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Consistency with UC Plans and Policies

LRDP Update

The proposed LRDP Update is generally consistent with the transportation-related goals and policies in the UC Sustainable Practice Policy and the UC Berkeley Sustainability Plan as it continues to encourage a shift away from drive-alone commute vehicle trips, which are a primary contributor to commute GHG emissions and localized transportation impacts. Already, approximately 41 percent of UC Berkeley employees, 5 percent of students, and an aggregate 15 percent of all employees and students currently drive alone to the UC Berkeley campus. While the employee drive-alone rate is higher than the Sustainable Practices Policy target of 40 percent by 2050 and the Sustainability Plan target of 36 percent by 2025, the total population drive-alone rate is below the Sustainable Practices Policy target of 30 percent by 2050. In the future, under implementation of the proposed LRDP Update, it is anticipated that a lower percentage of employees and students would drive alone to the UC Berkeley campus due to enhanced TDM programs, additional UC Berkeley housing, and a parking-to-commuter population ratio that will not increase.

Under the proposed LRDP Update, UC Berkeley would continue its existing TDM programs described in Section 5.15.1.2, Existing Conditions, under “Transportation Demand Management,” such as priced permit parking, carpool/vanpool incentives, transit subsidies, and the Bear Transit shuttles and would expand and add to the TDM programs to increase opportunities for employees and students to get to and from the UC Berkeley campus by means other than single-occupant vehicles. As listed in Chapter 3, Project Description,

of this Draft EIR, the proposed LRDP Update includes two goals (3.1 and 3.2) that would support the expansion of TDM programs and a reduction in single-occupant vehicle travel. In addition, the proposed LRDP Update includes several objectives that support both TDM programs and alternative modes of transportation, including:

- Campus Park Land Use Objective
 - Prioritize pedestrian and bicycle travel when completing major renovations or siting new buildings. Consider locating uses that attract visitors on the edge of the Campus Park or in the City Environs, and co-locate related academic functions to reduce the need for intercampus travel by modes other than walking or bicycling.
- Hill Campus West Land Use Objective
 - Support and maintain the existing housing and campus life facilities in the Hill Campus West with selective renovation, expansion, or redevelopment on previously developed sites. Land uses in this zone should leverage its proximity to the Campus Park.
- City Environs Land Use Objective
 - Complement and reinforce surrounding land use patterns to the extent possible, including leveraging available transportation resources such as the Downtown Berkeley BART station when locating uses that benefit from proximity to regional transit, such as administrative functions, and public attractions, including but not limited to museums, concert halls, athletics and recreation facilities, and other event venues.
- Mobility Systems Objectives
 - Prioritize more sustainable and carbon neutral transportation solutions for campus mobility needs, and include transportation demand management (TDM) strategies when planning for new campus facilities.
 - Prioritize pedestrian and bicycle travel within the Campus Park and to adjacent university properties by removing opportunities for unnecessary vehicle travel, redesigning potential areas of conflicts to improve and prioritize pedestrian and bicycle safety, and including pedestrian and bicycle facilities in new projects, to the extent feasible. Maintain necessary emergency and handicap accessible vehicle access to university properties while prioritizing pedestrian and bicycle access.
- Infrastructure, Resilience, and Emergency Objective
 - Support UC system and UC Berkeley goals to reduce energy consumption and achieve carbon neutrality by transitioning to carbon-free energy supply sources and evaluating on-site renewable energy generation.
- Collaborative Planning Mobility Objectives
 - Continue to partner with the City of Berkeley and transportation service providers to provide efficient, reliable, and safe transportation service to the campus.
 - Continue to plan UC Berkeley mobility services to complement, rather than compete with other local transportation services.
 - Collaborate with the City of Berkeley and Lawrence Berkeley National Laboratory on mobility initiatives of shared interest.
 - Work with the City of Berkeley and other partners on projects and initiatives that enhance pedestrian, bicycle, transit, and vehicular connections and safety between university properties and surrounding areas.

- When locating parking, consider opportunities for shared parking facilities that serve the campus community during the day, and other community needs in the evening.
- Explore further opportunities to improve transportation demand management (TDM) outcomes that reduce vehicle trips to the campus and make progress toward UC Berkeley sustainability goals.

As part of the proposed project, UC Berkeley and future development projects would implement the transportation (TRAN) CBPs listed here. This list identifies the CBPs that have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP TRAN-1 (Updated):** UC Berkeley will implement bicycle, pedestrian, and transit access and circulation improvements as part of new building projects, major renovations, and landscape projects. Improvements will address the goal of increasing non-vehicular commuting and safety; improving access from adjacent campus or city streets and public transit; reducing multi-modal conflict; providing bicycle parking; and providing commuter amenities.
- **CBP TRAN-2:** UC Berkeley will continue in partnership with the City of Berkeley to: (a) maintain the Southside area between College, Dana, Dwight and Bancroft in a clean and safe condition; and (b) provide needed public improvements to the area (e.g. traffic improvements, lighting, bicycle facilities, pedestrian amenities and landscaping).
- **CBP TRAN-3 (Updated):** The following housing and transportation policies will be continued:
 - Except for disabled students, students living in UC Berkeley housing will only be eligible for a daytime student fee lot permit or residence hall parking based upon demonstrated need, which could include medical, employment, academic, and other criteria.
 - An educational and informational program for students on commute alternatives will be included in new student orientation information.
- **CBP TRAN-4:** UC Berkeley will continue to work with the City of Berkeley, AC Transit, and BART to coordinate transit access to new academic buildings, parking facilities, and campus housing projects, in order to accommodate changing locations or added demand.

CBP TRAN-1 through CBP TRAN-4 would facilitate bicycle use, discourage auto use, and encourage public transit use. The ongoing implementation of CBP TRAN-1 through CBP TRAN-4, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional transportation impacts. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction and short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Currently, UC Berkeley provides housing in the vicinity of the Campus Park for about 23 percent of students and less than 1 percent of faculty. The proposed LRDP Update would increase the proportion of the population housed on the UC Berkeley properties to about 42 percent of the students and 12 percent of faculty at the buildout of the proposed LRDP Update, which would reduce the number of students and faculty driving to campus.

The proposed LRDP Update includes the construction of new parking facilities and elimination of some existing parking facilities and spaces, for a net increase that preserves the current ratio of parking supply to the UC Berkeley population. The LRDP Update identifies a net new parking increase target of 1,240 spaces, which addresses parking demand generated by the population growth (at current parking supply rates) and also replaces the 300 spaces that until recently have been provided via attendant (valet) parking. A portion of the net new parking spaces is also intended to serve the estimated number of new employees or students who might park on city streets due to lack of available new UC Berkeley parking unless the new spaces were built. Although the overall parking supply would increase under the proposed LRDP Update buildout, the parking supply-to-population ratio for commuters would remain constant. In addition, any new parking structures developed under the proposed LRDP Update would include a business-case analysis for new proposed parking structures, consistent with the UC Sustainable Practices Policy.

Based on this evaluation, the proposed LRDP Update would conflict with the UC Sustainable Practices Policy and the UC Berkeley Sustainability Plan because UC Berkeley does not currently meet the targets for SOV mode share for 2025 or 2050 established in these documents (as of 2019, the current SOV commute mode share for UC Berkeley is 41 percent for employees, 5 percent for students, and 15 percent for employees and students combined; although the student and the employee and student combined mode shares meet the targets, the employee mode share does not meet the 2025 or 2050 targets), therefore, impacts are potentially *significant*.

Impact TRAN-1: Implementation of the proposed project would not be consistent with the UC Sustainable Practices Policy and the UC Berkeley Sustainability Plan.

Mitigation Measure TRAN-1: UC Berkeley shall continue to survey the transportation practices of both students and employees at least once every 3 years and use the survey results to adjust the travel demand management programs, parking pricing, education and outreach, support for telecommuting, and other measures to achieve the vehicle mode share goals in the UC Sustainable Practices Policy and the UC Berkeley Sustainability Plan. To meet these goals as of 2020, UC Berkeley's single-occupant vehicle (SOV) targets are:

- 2025: Employees SOV rate of 36 percent, Student SOV rate of 5 percent
- 2050: Employee SOV rate of 36 percent, Employee and Student SOV rate of 13 percent

UC Berkeley's Office of Physical & Environmental Planning shall verify compliance with this measure and may update these targets over time to ensure ongoing compliance with the UC Sustainable Practices Policy and the UC Berkeley Sustainability Plan.

Significance with Mitigation: Less than significant.

Housing Project #1

Housing Project #1, an infill, high-density, mixed-use student housing development with on-site amenities across the street from the Campus Park, would allow students who may currently travel to and from the UC Berkeley campus by car to live closer to the Campus Park and travel to the UC Berkeley campus by walking, bicycling, or shuttle. The project would also provide a 1,000-square-foot commuter lounge on the ground

floor, with lockers and restrooms for commuter students, which supports commuting by transit. It is therefore consistent with the transportation-related goals to reduce SOV commuting in the UC Sustainable Practice Policy because it would provide student housing within walking distance of the Campus Park and commercial and recreational amenities in Downtown Berkeley, and would therefore contribute to fewer automobile trips and less VMT generated by UC Berkeley. Therefore, this project would have a *less-than-significant* impact related to conflicts with the UC Sustainable Practices Policy.

Significance without Mitigation: Less than significant.

Housing Project #2

Housing Project #2 would be an infill, high-density, mixed-use, primarily student housing development with various on-site amenities in close proximity to the Campus Park (i.e., about 0.2 miles), which would allow students who may currently travel to and from campus by car to travel by walking, bicycling, or shuttle to the UC Berkeley campus. It is therefore consistent with the transportation-related goals to reduce SOV commuting in the UC Sustainable Practice Policy because it would provide student housing within walking distance of the Campus Park and retail and recreational amenities in Southside Berkeley and would therefore contribute to fewer automobile trips and less VMT generated by the UC Berkeley campus. Therefore, Housing Project #2 would have a *less-than-significant* impact related to conflicts with the UC Sustainable Practices Policy.

Significance without Mitigation: Less than significant.

Consistency with Local Plans and Policies

LRDP Update

The proposed LRDP Update includes the following Collaborative Planning Mobility Systems Objectives to support consistency with local plans and policies:

- Continue to partner with the City of Berkeley and transportation service providers to provide efficient, reliable, and safe transportation service to the campus.
- Continue to plan UC Berkeley mobility services to complement, rather than compete with other local transportation services.
- Collaborate with the City of Berkeley and Lawrence Berkeley National Laboratory on mobility initiatives of shared interest.
- Work with the City of Berkeley and other partners on projects and initiatives that enhance pedestrian, bicycle, transit, and vehicular connections and safety between university properties and surrounding areas.
- When locating parking, consider opportunities for shared parking facilities that serve the campus community during the day, and other community needs in the evening.
- Explore further opportunities to improve transportation demand management (TDM) outcomes that reduce vehicle trips to the campus and make progress toward UC Berkeley sustainability goals.

Consistency with City of Berkeley Plans and Policies

While UC Berkeley is a constitutionally created state agency that is not subject to the policies and requirements of the City of Berkeley whenever using property under its control in furtherance of its educational mission, the following discussion provides information on the alignment of the proposed LRDP Update with several relevant City plans and policies.

City of Berkeley General Plan Transportation Element

As listed in Chapter 3, Project Description, the proposed LRDP Update contains principles and goals and proposed circulation infrastructure and services on the UC Berkeley campus that are intended to improve access to, on, and throughout the UC Berkeley campus by all travel modes, with an emphasis on nonauto modes. Therefore, the proposed LRDP Update is consistent with the City of Berkeley General Plan Transportation Element goals and policies, particularly Policy T-16, Access by Proximity (Improve access by increasing proximity of residents to services, goods, and employment centers), and T-41, Structured Parking (Encourage consolidating surface parking into structure parking and redevelopment of surface lots with residential or commercial development where allowed by zoning). The proposed LRDP Update's proposed circulation changes would be wholly contained on the UC Berkeley campus and would not impede City of Berkeley roadway network infrastructure improvements.

City of Berkeley Complete Streets Policy

As listed in Chapter 3, Project Description, the proposed LRDP Update contains principles and goals and proposed circulation infrastructure and services on the UC Berkeley campus that are intended to improve access to, on, and throughout the UC Berkeley campus by all travel modes, with an emphasis on nonauto modes. It is aligned with the City of Berkeley's Complete Streets Policy, which includes principles and implementation requirements that address context sensitivity in design, incorporation of complete streets considerations into all phases of project development, and consideration of network connectivity. The proposed LRDP Update proposes pedestrian, bicycle, and transit facilities that connect to City facilities, with the goal of providing a highly connected combined campus/off-campus network.

City of Berkeley Bicycle Plan

The proposed LRDP Update proposes bicycle facility improvements, bike parking, and a network of mobility hubs that would include bicycle share stations and wayfinding maps on the UC Berkeley campus. These improvements align with and would not impede the City of Berkeley Bicycle Plan's policies and implementing actions. In particular, the proposed LRDP Update is aligned with Policy D-1, Design a Low Stress Bikeway Network suitable for the "Interested but Concerned," to include people all ages and ability levels riding bicycles in Berkeley, and the following implementing action:

Work with AC Transit, UC Berkeley, and other transit providers to design bikeways to minimize transit-vehicle interactions, optimize transit service and operations, and provide low stress bike-to-transit access environments in areas heavily served by transit. In designing for both bicycles and transit, utilize the latest national design best practices, such as the NACTO Transit Street Design Guide and Urban

Street Design Guide. Local guidance, such as the forthcoming AC Transit Design Standards and Guidelines Manual for Safe and Efficient Multimodal Transit Stops and Corridors will also be consulted.

In addition, the proposed LRDP Update does not propose any modifications off of the UC Berkeley campus that would impede the planned improvements in the City of Berkeley Bicycle Plan.

City of Berkeley Pedestrian Master Plan

The proposed LRDP Update proposes improvements to the pedestrian network on the UC Berkeley campus, including improved pedestrian gateways to the UC Berkeley campus that would provide high quality connections to the off-campus pedestrian network. These improvements align with and would not impede the City of Berkeley Pedestrian Master Plan's policies and implementing actions. UC Berkeley references and considers the City of Berkeley Pedestrian Master Plan when planning projects in the City Environs Properties or campus edge. In particular, the proposed LRDP Update is aligned with City of Berkeley Pedestrian Master Plan Policy 3.2 Action A, Policy 3.2 Action C.1, and Policy 3.2 Implementation Measure 1. In addition, the proposed LRDP Update does not propose any off-campus changes that would impede the planned improvements in the City of Berkeley Pedestrian Master Plan.

City of Berkeley VMT Policy

The City of Berkeley VMT criteria and thresholds are described in Section 5.15.1.1. The City's recommended VMT significance thresholds are as follows:

- A residential project's VMT impact is considered less than significant if its household VMT per capita is at least 15 percent below the regional average household VMT per capita.
- An employment-generating project's VMT impact is considered less than significant if its home-work VMT per worker is at least 15 percent below the regional average home-work VMT per worker.

The analysis of the proposed LRDP Update's VMT impact uses two significance thresholds that are the same as the City of Berkeley's recommended thresholds, as described under Impact Discussion TRAN-2.

City of Berkeley Vision Zero Resolution and Vision Zero Action Plan

The proposed LRDP Update contains several objectives that support working with the City of Berkeley on Vision Zero goals (see proposed LRDP Update Mobility System objectives and Collaborative Planning Mobility objectives).

Significance without Mitigation: Less than significant.

Housing Project #1

Any modifications to city streets needed for Housing Project #1 would be designed to conform to City of Berkeley roadway design standards and the provisions in the City's Complete Streets Policy, which are consistent with the mobility policies in the proposed LRDP Update. Housing Project #1 would not prevent or obstruct city roadway improvements, such as the cycle tracks proposed for Oxford Street and University Avenue adjacent to the Housing Project #1 site, that are included in the City of Berkeley Bicycle Plan and

that Housing Project #1 would partially implement. Housing Project #1 would improve mobility for project residents walking, bicycling, and taking transit. There would be no conflicts with a program, plan, ordinance, or policy addressing the circulation system, and the impact would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Any modifications to city streets needed for Housing Project #2 would be designed to conform to City's roadway design standards and the provisions in the City's Complete Streets Policy, which are consistent with the mobility policies in the proposed LRDP Update. Housing Project #2 does not include encroachment into the city right-of-way and would thus not prevent or obstruct city roadway improvements, such as the proposed improved bicycle lanes on Bowditch Street adjacent to the Housing Project #2 site, which are included in the City's 2017 Bicycle Plan. Housing Project #2 would improve mobility for project residents walking, bicycling, and taking transit. There would be no conflicts with a program, plan, ordinance, or policy addressing the circulation system, and the impact would be *less than significant*.

Significance without Mitigation: Less than significant.

TRAN-2	The proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).
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LRDP Update

Most of the proposed uses in the proposed LRDP Update would meet the VMT screening criteria for projects within one-half mile of a major transit stop or a stop on a high-quality transit corridor. All of the Campus Park and segments of the Hill Campus West and the Clark Kerr Campus, and most of the City Environs Properties, are either within one-half mile of the Downtown Berkeley BART Station or one-half mile of stops on AC Transit Lines 51B and 52, which provide 15 minutes or less headways during peak commute times.

Notwithstanding, this Draft EIR does not propose screening out the proposed LRDP Update from further VMT analysis. A comprehensive VMT analysis is presented below to provide a complete and transparent assessment of the proposed LRDP Update's impact on VMT.

Implementation of the proposed LRDP Update would result in all six UC Berkeley VMT metrics falling under the relevant significance thresholds described above in Section 5.15.2.1, Methodology, under subheading "Baseline VMT Significance Thresholds." The VMT calculations and significance determination are summarized in Table 5.15-9, Baseline plus Project VMT Summary, and Table 5.15-10, Baseline plus Project VMT Significance Determination. Detailed calculation inputs are provided in Appendix M, Transportation Data, of this Draft EIR. Accordingly, the impact would be *less than significant*.

TABLE 5.15-9 BASELINE PLUS PROJECT VMT SUMMARY

Population	Number	Daily VMT Rate	Rate per	VMT Type	2019 plus Project Daily VMT
Commuters					
Staff	14,800	14.50	Commuter	Home - work trips	214,551
Faculty	3,619	5.86	Commuter	Home - work trips	21,209
Graduate Students	10,855	2.12	Commuter	Home - work trips	23,074
Undergraduate Students	17,270	1.46	Commuter	Home - work trips	25,299
Total	46,574				284,133
Residents					
Faculty	581	7.60	Residential Unit	Home-based trips	4,416
Graduate Students	2,315	0.60	Bed	Home-based trips	2,009
Undergraduate Students	17,730	0.60	Bed	Home-based trips	10,638
Total Residential VMT	20,626				17,062
Total VMT					301,195

Source: Fehr & Peers, 2020.

TABLE 5.15-10 BASELINE PLUS PROJECT VMT SIGNIFICANCE DETERMINATION

	Existing (Baseline) plus Project Metrics					
	Metric 1	Metric 2	Metric 3	Metric 4	Metric 5	Metric 6
	Daily Home-Work VMT per Faculty, Staff, and Student Population	Daily Home-Based VMT per Resident Student	Daily Home-Based VMT per Resident Faculty	Daily VMT per All Students	Daily VMT per All Staff and Faculty	Daily VMT per All Students, Staff, and Faculty
VMT	284,133	12,647	4,416	61,020	240,175	301,195
Population	46,574	20,045	581	48,200	19,000	67,200
VMT/Population	6.10	0.63	7.60	1.27	12.64	4.48
Regional Average VMT/Population	18.1	19.8	19.8			
Threshold: 15% Below Regional Average	15.4	16.9	16.9	The regional baseline thresholds do not apply to Metrics 4 to 6		
Threshold Met Under Baseline Plus Project Conditions?	Yes (6.10 < 15.4)	Yes (0.63 < 16.9)	Yes (7.60 < 16.9)			
Campus Baseline VMT/Population				1.27	12.64	4.48
Threshold: No Worse Than Baseline	The campus baseline thresholds do not apply to Metrics 1 to 3			1.43	12.67	4.57
Threshold Met Under Baseline Plus Project Conditions?				Yes (1.27 < 1.43)	Yes (12.64 < 12.67)	Yes (4.48 < 4.57)

Source: Fehr & Peers, 2020.

Significance without Mitigation: Less than significant.

Housing Project #1

Housing Project #1 is less than a quarter-mile walking distance from Downtown Berkeley BART station, as well as AC Transit bus routes 51B and 52 stops and Bear Transit shuttle stops. Route 51B operates at 10-minute or less headways during its service hours; Bear Transit operates at 30-minute headways. The proposed Housing Project #1 therefore can be presumed to have a less than significant impact with respect to VMT using the transit proximity screening criteria (refer to section 5.15.2). Therefore, this impact is *less than significant*.

Note that a VMT estimate was prepared for Housing Project #1 for use in the GHG emissions analysis presented in Chapter 5.7, Greenhouse Gas Emissions, and can be found in Appendix M, Transportation Data, of this Draft EIR.

Significance without Mitigation: Less than significant.

Housing Project #2

Housing Project #2 is less than a quarter-mile walking distance from AC Transit route 51B stops on both College Avenue and Durant Avenue, and Route 6 stops on Telegraph Avenue. These routes run at 10- to 15-minute headways during service hours. In addition, the BEAR Transit R Line has stops one to two blocks from the proposed Housing Project #2 site on Bowditch Avenue and College Avenue. Both the AC Transit and Bear Transit services provide direct connections between the Housing Project #2 site and Downtown Berkeley BART. Housing Project #2 therefore can be presumed to have a less than significant impact with respect to VMT using the transit proximity screening criteria (see to Section 5.15.2, Standards of Significance). Therefore, this impact is *less than significant*.

Note that a VMT estimate was prepared for Housing Project #2 for use in the GHG emissions analysis presented in Chapter 5.7, Greenhouse Gas Emissions, and can be found in Appendix M, Transportation Data, of this Draft EIR.

Significance without Mitigation: Less than significant.

TRAN-3	The proposed project could substantially increase hazards due to a design feature.
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Implementation of the proposed LRDP Update, including the proposed Housing Projects #1 and #2, could include design features related to roadways and sidewalks, and buildings and structures, that could create hazardous conditions for automobile drivers, bicyclists, and pedestrians. The following sections discuss the potential for such impacts.

LRDP Update

Incompatible Use Hazards

The proposed project is an overarching plan to guide long-term development of residential, academic life, campus life, parking, and open space within the entire EIR Study Area; therefore, it would not introduce an incompatible use with the potential to create a transportation hazard.

Roadway- and Sidewalk-Design-Related Hazards

As part of the proposed project, UC Berkeley and future development projects would implement the transportation (TRAN) CBPs listed here. This list identifies the CBPs that have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP TRAN-5 (Updated):** UC Berkeley will require contractors working on major new construction or major renovation projects to develop and implement a Construction Traffic Management Plan that reduces construction-period impacts on circulation and parking within the vicinity of the project site. The Construction Traffic Management Plan will address job-site access, vehicle circulation, bicycle and pedestrian safety, and be coordinated with the City of Berkeley Public Works Department when projects require temporary modifications to city streets.
- **CBP TRAN-6 (Updated):** For each construction project, UC Berkeley will require the prime contractor to prepare a Construction Traffic Management Plan which will include the following elements:
 - Proposed truck routes to be used, consistent with the City truck route map.
 - Construction hours, including limits on the number of truck trips during the morning (AM) and evening (PM) peak traffic periods (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.), if conditions demonstrate the need.
 - Proposed employee parking plan (number of spaces and planned locations).
 - Proposed construction equipment and materials staging areas, demonstrating minimal conflicts with circulation patterns.
 - Expected traffic detours needed, planned duration of each, and traffic control plans for each.
 - Identifying bicycle and pedestrian detours and safety plan, including solutions to address impacts to accessible routes.
- **CBP TRAN-7:** UC Berkeley will manage project schedules to minimize the overlap of excavation or other heavy truck activity periods that have the potential to combine impacts on traffic loads and street system capacity, to the extent feasible.
- **CBP TRAN-8:** UC Berkeley will reimburse the City of Berkeley for its fair share of costs associated with damage to City streets from UC Berkeley construction activities, provided that the City adopts a policy for such reimbursements applicable to all development projects within Berkeley.

CBP TRAN-5 through CBP TRAN-8 establish a series of actions and procedures that UC Berkeley and future development must comply with to reduce potential roadway and sidewalk hazards associated with construction projects. The ongoing implementation of CBP TRAN-5 through CBP TRAN-8, and the CBPs

discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional transportation hazards. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts. With adherence to these CBPs during the construction phase of potential future development projects, impacts during the construction phase would be *less than significant*.

The development associated with the proposed LRDP Update would be subject to and constructed in accordance with the UC Facilities Manual and all applicable City, Caltrans, and/or industry standard roadway design and safety guidelines. Therefore, the proposed LRDP Update would not substantially increase hazards due to a geometric design feature related to roadway or sidewalks, as discussed further below.

The proposed LRDP Update includes roadway reconfigurations within the Campus Park and the Clark Kerr Campus to better accommodate bicyclists, pedestrians, and shuttles, while continuing to provide access for service and delivery vehicles where needed. The proposed LRDP Update does not provide engineering designs. Any new or reconfigured roadway or path extensions would be required to comply with the UC Facilities Manual, which requires UC Berkeley to comply with the California Building Standards Code, Parts 1 to 12, and all amendments. To the extent indicated in the UC Facilities Manual, UC Berkeley would also comply with current best practice roadway design guidance, such as the Caltrans Highway Design Manual and the California Manual on Uniform Traffic Control Devices, and follow practices described in NACTO publications.

Though UC Berkeley is the authority having jurisdiction (AHJ) for matters of code regulations on UC Berkeley projects, local jurisdictions can review the emergency access plans for UC Berkeley projects, analyzing items such as road location, configuration, turning radius, and width. This would be particularly important for locations where the UC Berkeley campus and city networks interface. As the AHJ, UC Berkeley would ensure that all proposed transportation network changes on the UC Berkeley campus meet the above-mentioned code requirements and would work collaboratively with the City of Berkeley and other jurisdictions as appropriate to ensure that connections to non-UC Berkeley facilities are appropriately designed to minimize hazards. Therefore, development of the proposed LRDP Update would be subject to and constructed in accordance with applicable AHJ, City, County, Caltrans, and/or industry standard roadway design and safety guidelines, and transportation facilities would not increase hazards.

Building-Design-Related Hazards

Future development that implements the proposed LRDP Update could include new buildings up to 17 stories above ground level in the EIR Study Area. The demolition of existing structures and construction of new structures could alter pedestrian-level (i.e., ground level) wind conditions in pedestrian areas in the public rights-of-way such as sidewalks and plazas. Wind can become a “downwash” that flows down the building façade to the ground, a tunnel or channeled flow between buildings, or a combination of these effects. Though CEQA guidance does not list any specific criterion for the evaluation of wind effects of a project, high wind speeds can pose a hazard at the pedestrian level in the public right-of-way and are therefore considered in this analysis to address potential hazards to pedestrian facilities pursuant to CEQA. In general, wind effects from buildings can be reduced or avoided through refining final building and structure design—for example, by adjusting the building massing through setbacks, stepbacks, or terraces

or by incorporating design features such as canopies, screens, and landscaping. Because wind effects are a function of building design and location, the potential for wind hazards to pedestrians from specific development projects cannot be definitively determined until building designs are finalized. Final exterior building designs are not yet available for potential future buildings or structures from implementation of the proposed LRDP Update, including those for the proposed Housing Projects #1 and #2. Therefore, UC Berkeley has determined that future development projects that are 100 feet in height or taller in the EIR Study Area have the potential to generate wind flows that could create pedestrian-level hazards, which would be a *significant* impact.

Impact TRAN-3: The final exterior design of new buildings and structures that are 100 feet or more in height could create wind hazards at the pedestrian (ground) level.

Mitigation Measure TRAN-3: Prior to final exterior design approval of new buildings or structures that are 100 feet or more in height, the building or structure shall be analyzed for potential wind hazards at the pedestrian level in the public right-of-way around the project site. The wind hazards analysis shall be conducted by a qualified wind engineer using the final exterior plans. The analysis shall apply the industry-acceptable Lawson Criteria for pedestrian-level wind distress (safety) to identify locations where wind speeds may be hazardous to pedestrians in the public right-of-way around the project site. Where wind hazards are identified based on the final building or structure exterior designs, UC Berkeley, in consultation with the qualified wind engineer, shall identify feasible building or structure design refinements to reduce the hazardous wind effects to an acceptable level as determined by the qualified wind engineer using the Lawson Criteria. Feasible industry-standard wind reduction design refinements may include, but are not limited to, adjusted building setbacks, upper-floor building stepbacks, terraces, rounded or redesigned building corners, screens, canopies, or landscaping. Following the identification of feasible design refinements by UC Berkeley in consultation with the qualified wind engineer, the qualified wind engineer shall provide evidence of acceptable (i.e., nonhazardous) wind effects with the incorporation of the feasible building or structure exterior design refinements. The results of the wind analysis and the feasible and effective design refinements to reduce wind hazards shall be submitted to the UC Berkeley project manager for review prior to final design approval.

Significance with Mitigation: Significant and unavoidable. The final exterior design details regarding future buildings and structures are not known at this time, and because it is unknown if any exterior building refinements would be recommended and if so, if they would be feasible and sufficiently effective in reducing a wind hazard to pedestrian areas, the ability to reduce wind hazard impacts to pedestrians to a less-than-significant impact is unknown. The identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent qualifying projects that are 100 feet or more in height and can incorporate feasible and effective exterior building refinements as determined by UC Berkeley. However, due to the programmatic nature of the proposed LRDP Update, no additional mitigation measures are available, and the impact is considered *significant and unavoidable*.

Housing Project #1

Incompatible Use Hazards

The proposed Housing Project #1 would introduce mixed-use student housing building in the downtown area of the City of Berkeley across the street from the Campus Park and therefore would not introduce an incompatible use with the potential to create a transportation hazard.

Roadway- and Sidewalk-Design-Related Hazards

Implementation of proposed Housing Project #1 would not substantially increase hazards due to a geometric design feature related to roadway or sidewalks. The project modifications to roadways and sidewalks in the public right-of-way include:

- Elimination of the parking lane along Oxford Street to provide better emergency access to the building.
- Implementation of a cycle track along Oxford Street.
- Sidewalk bulb-outs on three of the four site corners to improve pedestrian comfort and convenience.
- Widening the sidewalk along University Avenue.

The roadway and sidewalk design features within the public right-of-way would be designed and constructed based on the applicable design standards and guidelines described in the discussion for the proposed LRDP Update. The City of Berkeley has been consulted during the design process and City of Berkeley recommendations have been incorporated into the design. Therefore, transportation facilities would not increase hazards.

Building-Design-Related Hazards

The proposed Housing Project #1 building would have up to 14 stories above ground and 2 below-ground levels. Buildings of this height have the potential to create wind effects that could pose a hazard in pedestrian areas. In general, wind effects from buildings can be reduced or avoided by refining final building and site design, as described for the proposed LRDP Update. Although conceptual building designs are available for Housing Project #1 and described in Chapter 3, Project Description, of this Draft EIR, the final exterior design of the project has not yet been finalized, and UC Berkeley does not require wind studies at this time. Accordingly, wind studies have not been prepared, and no feasible exterior building design recommendations have been identified to address potential pedestrian hazards from wind. Therefore, Housing Project #1 has the potential to generate wind flows that could create pedestrian-level hazards, which is a *significant* impact.

Impact: Same as Impact TRAN-3.

Mitigation Measure: Same as Mitigation Measure TRAN-3.

Significance with Mitigation: Significant and unavoidable. The final exterior design details of the proposed Housing Project #1 are not known at this time. Accordingly, it is unknown if any exterior building refinements would be recommended and if so, if they would be feasible and sufficiently effective in reducing a potential wind hazard to the pedestrian areas in the public right-of-way around

the project site; therefore, the ability to reduce wind hazard impacts to pedestrians to a less-than-significant impact is unknown. Compliance with Mitigation Measure TRAN-3 would require a wind study once final exterior building site plans are completed to determine if any feasible design refinements are recommended and effective in reducing a pedestrian hazard from wind. However, because the building design of Housing Project #1 has not been finalized, impacts remain significant and unavoidable.

Housing Project #2

Incompatible Use Hazards

The proposed Housing Project #2 would introduce mixed-use student housing building in a residential area within a block from the commercial corridor on Telegraph Avenue in the city of Berkeley and therefore would not introduce an incompatible use with the potential to create a transportation hazard.

Roadway- and Sidewalk-Design-Related Hazards

Implementation of proposed Housing Project #2 would not substantially increase hazards due to a geometric design feature related to roadway or sidewalks. The project modifications in the public right-of-way would be limited to sidewalk improvements along the project frontage, a passenger loading area on Haste Street, an access drive along the west side of the site between Haste Street and Dwight Way, and a new midblock crosswalk on Haste Street. The design features within the public right-of-way would be designed and constructed based on the applicable design standards and guidelines. Therefore, transportation facilities would not increase hazards.

Building-Design-Related Hazards

The tallest building proposed for Housing Project #2 would be up to 17 stories above ground level. Buildings of this height have the potential to create wind effects that could pose a hazard in pedestrian areas. In general, wind effects from buildings can be reduced or avoided by refining final building and site design, as described for the proposed LRDP Update. Though conceptual building designs are available for Housing Project #2, and described in Chapter 3, Project Description, of this Draft EIR, the final exterior design of the project has not yet been finalized, and UC Berkeley does not require wind studies at this time. Accordingly, wind studies have not been prepared, and no feasible exterior building design recommendations have been identified to address potential pedestrian hazards from wind. Therefore, Housing Project #2 has the potential to generate wind flows that could create pedestrian-level hazards, which is a *significant* impact.

Impact: Same as Impact TRAN-3.

Mitigation Measure: Same as Mitigation Measure TRAN-3.

Significance with Mitigation: Significant and unavoidable. The final exterior design details of the proposed Housing Project #2 are not known at this time. Accordingly, it is unknown if any exterior building refinements would be recommended and if so, if they would be feasible and sufficiently effective in reducing a potential wind hazard to the pedestrian areas in the public right-of-way around the project site; therefore, the ability to reduce wind hazard impacts to pedestrians to a less-than-

significant impact is unknown. Compliance with Mitigation Measure TRAN-3 would require a wind study once final exterior building site plans are completed to determine if any feasible design refinements are recommended and would be effective in reducing pedestrian hazards from wind. However, because the building design of Housing Project #2 has not been finalized, impacts remain significant and unavoidable.

TRAN-4	The proposed project would not result in inadequate emergency access.
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LRDP Update

Implementation of the proposed LRDP Update would not result in inadequate emergency access. Future roadway modifications would be designed in a manner consistent with applicable regulations, including those related to roadway widths. In addition, UC Berkeley would coordinate with other agencies, as appropriate and consistent with the proposed LRDP Update and per City of Berkeley policies, to ensure the safe transition between UC Berkeley facilities and other infrastructure.

Efficient operations of UC Berkeley roadways help to reduce response times for emergency responders. The emergency access analysis was conducted to determine if the proposed LRDP Update has the potential to impact emergency vehicle access by creating conditions that would substantially affect the ability of drivers to yield the right-of-way to emergency vehicles or preclude the ability of emergency vehicles to access streets within the EIR Study Area.

All UC Berkeley campus roadway reconfigurations would be designed and constructed in a manner consistent with the UC Facilities Manual, which notes that UC Berkeley must comply with the California Building Standards Code, Parts 1 to 12 and all amendments. UC Berkeley would also comply with applicable federal, State, and local agency regulations related to roadway and transportation facility design.

The proposed LRDP Update's multimodal network does not conflict with or block the UC Berkeley campus fire access routes. Even though the proposed LRDP Update would eliminate most public motor vehicle access in the Campus Park, the final design for internal Campus Park roadways would ensure continued emergency vehicle access throughout the Campus Park.

Increases in automobile, bicycle, and pedestrian demand associated with the proposed LRDP Update would not substantially affect emergency vehicle access patterns; however, additional vehicles associated with implementation of the proposed LRDP Update could increase delays for emergency response vehicles during peak commute hours, especially in the immediate vicinity of the Campus Park. However, emergency responders maintain response plans that include use of alternate routes, sirens, emergency vehicle preemption at traffic signals, and other methods to bypass congestion and minimize response times. In addition, California law requires drivers to yield the right-of-way to emergency vehicles and remain stopped until the emergency vehicle passes.

Additionally, the City of Berkeley General Plan specifies policies (Policy T-28, Emergency Access, Policy S-1, Response Planning, and Policy S-22, Fire Fighting Infrastructure) to ensure the City maintains adequate

emergency response times, and that developments of emergency facilities and delivery keep pace with development and growth in the city of Berkeley. Accordingly, the impact would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Implementation of the Housing Project #1 would not result in inadequate emergency access. Emergency vehicles would be able to access the project site from all four sides on Oxford Street to the east, University Avenue to the south, Walnut Street to the west, and Berkeley Way to the north; primary emergency access would be via Oxford Street. Therefore, if one direction of approach is blocked or otherwise inaccessible, emergency vehicles could use another route to access the project building. Accordingly, the impact would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Implementation of the Housing Project #2 would not result in inadequate emergency access. Emergency access vehicles would be able to access the project site from all four sides on Bowditch Street to the east, Dwight Way to the south, a new access drive between Haste Street and Dwight Way to the west, and Haste Street to the north. The three public streets and the private access drive would accommodate emergency access vehicles. Each of the project buildings could be accessed from at least two directions. Therefore, if one direction is inaccessible, emergency vehicles could use another route to access each project building. Therefore, the impact would be *less than significant*.

Significance without Mitigation: Less than significant.

TRAN-5	The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in a significant cumulative impact.
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The cumulative transportation impact assessment focuses on transportation significance criterion 2, which is based on if the proposed project would conflict or be inconsistent with CEQA Guidelines 15064.3, subdivision (b). Impact assessments for criteria 1, 3, and 4 would be the same as described in impact discussions TRAN-1, TRAN-3 (with the exception of pedestrian hazards from wind), and TRAN-4.

LRDP Update

Implementation of the LRDP Update under cumulative conditions would result in all six UC Berkeley VMT metrics falling below the relevant significance thresholds described above in Section 5.15.2.1, Methodology, under subheading Cumulative VMT Significance Thresholds. The VMT calculations and significance determination are summarized in Table 5.15-11, Cumulative Plus Project VMT Summary, and Table 5.15-12, Cumulative Plus Project VMT Significance Determination. Detailed calculation inputs are provided in Appendix M, Transportation Data, of this Draft EIR. Accordingly, the impact would be *less than significant*.

TABLE 5.15-11 CUMULATIVE PLUS PROJECT VMT SUMMARY

Population	Number	Daily VMT Rate	Rate per	VMT Type	2040 Plus Project Daily VMT
Commuters					
Staff	14,800	14.50	Commuter	Home - work trips	214,551
Faculty	3,619	5.86	Commuter	Home - work trips	21,209
Graduate Students	10,885	2.12	Commuter	Home - work trips	23,074
Undergraduate Students	17,270	1.46	Commuter	Home - work trips	25,299
Total	46,574				284,133
Residents					
Faculty	581	7.60	Residential Unit	Home-based trips	4,416
Graduate Students	2,315	0.60	Bed	Home-based trips	2,009
Undergraduate Students	17,730	0.60	Bed	Home-based trips	10,638
Total Residential VMT	20,626				17,062
Total					301,195

Source: Fehr & Peers, 2020.

TABLE 5.15-12 CUMULATIVE PLUS PROJECT VMT SIGNIFICANCE DETERMINATION

	Cumulative (2040) Plus Project Metrics					
	Metric 1	Metric 2	Metric 3	Metric 4	Metric 5	Metric 6
	Daily Home-Work VMT per Faculty, Staff, and Student Population	Daily Home-Based VMT per Resident Student	Daily Home-Based VMT per Resident Faculty	Daily VMT per All Students	Daily VMT per All Staff and Faculty	Daily VMT per All Students, Staff, and Faculty
VMT	284,133	12,647	4,416	61,020	240,175	301,195
Population	46,574	20,045	581	48,200	19,000	67,200
VMT/ Population	6.10	0.63	7.60	1.27	12.64	4.48
Regional Average VMT/ Population (2040)	18.3	19.1	19.1			
Threshold: 15% Below Regional Average	15.5	16.2	16.2	The regional cumulative thresholds do not apply to Metrics 4 to 6		
Threshold Met Under Cumulative With Project Conditions?	Yes (6.1 < 15.5)	Yes (0.63 < 16.2)	Yes (7.60 < 16.2)			
UC Berkeley Baseline VMT/ Population				1.43	12.67	4.57
Threshold: No Worse Than Baseline	The UC Berkeley baseline thresholds do not apply to Metrics 1 to 3			1.43	12.67	4.57
Threshold Met Under Cumulative With Project Conditions?				Yes (1.27 < 1.43)	Yes (12.64 > 12.67)	Yes (4.48 > 4.57)

Source: Fehr & Peers, 2020.

Though VMT impacts under impact discussion TRAN-5 are less than significant, UC Berkeley is nevertheless committed to minimizing auto use and VMT. As described in Chapter 3, Project Description, the proposed LRDP Update Goal 3.2 requires UC Berkeley to promote sustainable transportation modes to decrease carbon emissions, congestion, and parking demand. The proposed LRDP Update also proposes to continue to promote TDM strategies to reduce commute drive-alone mode shares. The VMT analysis described in impact discussion TRAN-5 does not assume any new or expanded TDM programs or services, which would be expected to further reduce vehicle travel and thus VMT from the values described above.

As part of the proposed project, UC Berkeley and future development projects would implement the transportation (TRAN) CBP listed here, which has been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

CBP TRAN-9 (Updated): UC Berkeley will continue to survey the transportation practices of both students and employees at least once every 3 years. UC Berkeley will use the survey results for the following:

- Review the effectiveness of the transportation demand management programs and services offered to the UC Berkeley population, including participation, ridership, and other metrics, to assess where demand for expanded or new programs or services is apparent. This effort will include potential emerging mobility services, as well as services provided by others that UC Berkeley may contribute to, in order to increase the use of non-single-occupant vehicle travel modes.
- Monitor the use of single-occupant vehicles by commuters and track commute single-occupant vehicle use for faculty, staff, and student commuters. The single-occupant vehicle usage will be a proxy for vehicle miles traveled (VMT), as is it not feasible to directly measure commuter VMT given the mixed-use operation of most UC Berkeley parking facilities.

Continued implementation of CBP TRAN-9 will guide transportation planning and management under the proposed LRDP Update. These CBPs focus on commute trips, because student and faculty residential SOV use is very low compared to commuters. The ongoing implementation of CBP TRAN-9, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional transportation impacts. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts. Through these CBPs, UC Berkeley will continue to strive to reduce auto use over the life of the proposed LRDP Update, and therefore cumulative impacts from VMT would be less than significant.

As described in impact discussion TRAN-3, the final exterior design of future development projects that are 100 feet in height or taller in the EIR Study Area have the potential to generate wind flows that could create wind hazards at the pedestrian (ground) level. Wind effects from potential future development can be exacerbated by other development projects, depending on the setting and timing of cumulative development. Therefore, the proposed LRDP Update has the potential to cause a cumulatively considerable pedestrian hazard from wind. Implementation of Mitigation Measure TRAN-3 would require a wind analysis and feasible and effective building or structure design refinements to reduce wind hazards. Because the final exterior design details and timing of future buildings and structures are not known at this time, and

because it is unknown if any exterior building refinements would be recommended and if so, if they would be feasible and sufficiently effective in reducing a wind hazard to pedestrian area, the ability to reduce wind hazard impacts to pedestrians to a less-than-significant impact is unknown. Therefore, this is a *significant* cumulative impact.

Impact TRAN-5: The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to wind hazards at the pedestrian (ground) level.

Mitigation Measure TRAN-5: Implement Mitigation Measure TRAN-3.

Significance with Mitigation: Significant and unavoidable. Because the final exterior design details and timing of future buildings and structures that implement the proposed LRDP Update and cumulative projects are not known at this time, and because it is unknown if any exterior building refinements would be recommended and if so, if they would be feasible and sufficiently effective in reducing a wind hazard to pedestrian area, the ability to reduce wind hazard impacts to pedestrians to a less-than-significant impact is unknown. Therefore, no additional mitigation measures are available, and the impact is considered *significant and unavoidable*.

Housing Project #1

The cumulative setting for Housing Project #1 is buildout under the proposed LRDP Update. As described under impact discussion TRAN-2, Housing Project #1 is presumed to have a less-than-significant impact with respect to VMT based on its proximity to a major transit stop (Downtown Berkeley BART station) and stops on high-quality transit corridors (AC Transit Routes 51B and 52). This impact would continue to be less than significant under cumulative conditions, because it is assumed the transit services would continue to operate in the future. Therefore, this impact is less than significant under cumulative conditions. However, wind hazards at the pedestrian (ground) level, as described above, are unknown and therefore Housing Project #1 has the potential to contribute to this *significant* cumulative impact.

Impact: Same as Impact TRAN-5.

Mitigation Measure: Same as Mitigation Measure TRAN-5.

Significance with Mitigation: Significant and unavoidable.

Housing Project #2

The cumulative setting for Housing Project #2 is buildout under the proposed LRDP Update. As described under impact discussion TRAN-2, Housing Project #2 is presumed to have a less than significant impact with respect to VMT based on its proximity to stops on high-quality transit corridors (AC Transit routes 51B and 6). This impact would continue to be less than significant under cumulative conditions, because it is assumed the transit services would continue to operate in the future. Therefore, this impact is less than significant under cumulative conditions. However, wind hazards at the pedestrian (ground) level, as

described above, are unknown and therefore Housing Project #2 has the potential to contribute to this *significant* cumulative impact.

Impact: Same as Impact TRAN-5.

Mitigation Measure: Same as Mitigation Measure TRAN-5.

Significance with Mitigation: Significant and unavoidable.

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5.16 TRIBAL CULTURAL RESOURCES

This chapter describes the potential tribal cultural resource (TCR) impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential TCR impacts, and identifies UC Berkeley’s continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts.

A general discussion of cultural resources is included in Chapter 5.4, Cultural Resources, of this draft environmental impact report (Draft EIR), which may be referenced in this chapter. This chapter is based, in part, on the following report prepared for the proposed LRDP Update and Housing Projects #1 and #2 EIR—Archaeological Resources Evaluation for the University of California Berkeley Long Range Development Program (LRDP) Draft Environmental Impact Report 2020, prepared by Archeo-Tec. This report contains confidential information and is therefore not available for public review.

5.16.1 ENVIRONMENTAL SETTING

5.16.1.1 REGULATORY FRAMEWORK

Federal

The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) protects Native American remains, including Native American graves on federal and tribal lands, and recognizes tribal authority over the treatment of unmarked graves. NAGPRA prohibits the selling of Native American remains and provides guidelines for the return of Native American human remains and cultural objects from any collection receiving federal funding, such as museums, universities, or governments. Noncompliance with NAGPRA can result in civil and criminal penalties.

State

California Health and Safety Code

Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the County Coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission (NAHC).

Section 7052 of the Health and Safety Code regulates the disturbance of Native American cemeteries as a felony. This provision protects human remains and prohibits the disturbance or removal of human remains from any location other than a dedicated cemetery. The provision further identifies steps to follow in the event of accidental discovery or recognition of any human remains, directs the County Coroner to

determine whether the remains are those of a Native American, and, if so, the coroner is required to contact the NAHC.

Senate Bill 18

Senate Bill 18 (SB 18), signed into law in September 2004, requires that local governments consult with California Native American tribes in order to give tribes an opportunity to participate in local land use decisions at the early planning stage for the protection or mitigation of impacts to tribal cultural places. The Governor's Office of Planning and Research is required to include in the General Plan Guidelines advice for how to conduct these consultations, which apply to adoption and amendment of general plans and specific plans, as defined in California Government Code Sections 65300 and 65450.

Assembly Bill 52

Assembly Bill 52 (AB 52), known as the Native American Historic Resource Protection Act, requires lead agencies to provide notice to tribes that are traditionally and culturally affiliated with a proposed project's geographic area, if they have requested to be notified, in order to include California tribes in determining if a project may result in significant impacts to tribal cultural resources (TCR), which may be undocumented or known only to the tribe. AB 52 defines a TCR as a site, feature, place, or a cultural landscape that is geographically defined in terms of size and scope, sacred place, or object with cultural value to a California Native American tribe that is either included or eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources, or that the lead agency chooses at its discretion to treat as a TCR. When a lead agency chooses to treat a resource as a TCR, that determination shall be supported with substantial evidence, applying the criteria in the historical register and considering the significance of the resource to a California tribe. A project that may cause substantial adverse change in the significance of a TCR is one that may have a significant effect on the environment.

Consultation with California tribes may include, but is not limited to, discussion of the type of environmental review necessary, the significance of TCRs, the significance of the proposed project impacts on the TCRs, and alternatives and mitigation measures recommended by the tribe. Mitigation measures agreed upon must be included in the environmental document. Consultation is considered concluded when the parties agree to measures to avoid or reduce a significant impact on a TCR, or when a party concludes that mutual agreement cannot be reached. If no formal agreement on the appropriate mitigation has been established, mitigation measures that avoid or substantially lessen potential significant impacts should be implemented, if feasible.

University of California

Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley campus built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing UC Berkeley buildings,

infrastructure, grounds, and maintenance issues. Relevant sections of the Design Standards are summarized as follows:

- In the event that artifacts, human remains, or other cultural resources are discovered during construction, the Contractor shall protect the discovered items, cease work for a distance of thirty-five feet (35'-0") radius in the area, and notify the Owner's Representative in writing. The Owner may retain an archaeological consultant to evaluate findings in accordance with standard practice and applicable regulations. Artifact recovery, if deemed appropriate, will be conducted during the period when construction activities are on hold. Following completion of artifact recovery, a Change Order may be issued to adjust the contract time if required. Development shall accommodate sites or areas of historical or archeological significance. Approval shall be obtained before altering any archeological, historical, or cultural resource eligible for, or listed in the National Register of Historic Places.
- If a utilities earthwork project is likely to affect a known cultural resource, mitigation shall be required by avoiding or reducing ground disturbance.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to tribal cultural resources as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP update is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.16.3, Impact Discussion.

5.16.1.2 EXISTING CONDITIONS

Section 5.4.1.2, Existing Conditions, of Chapter 5.4, Cultural Resources, of this Draft EIR, provides a detailed description of the general cultural setting of the EIR Study Area, which encompasses the sites for the proposed Housing Projects #1 and #2. The description in Chapter 5.4 includes the natural setting, prehistoric context, ethnographic background, historical overview, identified archaeological resources, and identified historical resources. Below is a summary of the historical and cultural context of the EIR Study Area specific to TCRs.

LRDP Update

Prehistoric Context

The San Francisco Bay region has been occupied by humans for at least 12,000 years.^{1,2} Between 8000 and 3500 BC, people were largely mobile foragers utilizing large leaf-shaped projectile points and handheld

¹ Bartelink, Eric J, 2009, Late Holocene Dietary Change in the San Francisco Bay Area: Stable Isotope Evidence for an Expansion in Diet Breadth, *California Archaeology* 1(2):227-252.

² Erlandson, Jon M., Torben C. Rick, Terry L. Jones, and Judith F. Porcasi, 2007, *One If by Land, Two If by Sea: Who Were the First Californians?* In *California Prehistory: Colonization, Culture and Complexity*, Terry L. Jones and Kathryn A. Klar, editors, pages 53 to 63, AltaMira Press, Lanham.

milling stones. Stone technologies, trade, and sedentism increased during the Early Period/Middle Archaic ranging between 3,500 and 500 BC. Many sites dating to this period in the San Francisco Bay region are shellmounds, that is, midden sites containing large quantities of mollusk shells. There were over 400 shellmounds recovered around the San Francisco Bay in the early 20th century.³ The West Berkeley shellmound, situated at the mouth of Strawberry Creek at the San Francisco Bay, was occupied as early as 4,000 years ago and yielded artifacts such as stone net sinkers; an abundance of mortars, pestles, and bone implements; rectangular shell beads; weapon tips and knives; and bi-pointed bone objects.⁴

Ethnographic Background

Prior to European arrival in the 18th century, the EIR Study Area was situated within territory occupied by the Ohlone people, specifically the Huchiun Ohlone who spoke the Chochenyo Ohlone dialect. The Ohlone culture may have come from the fusion of Hokan and Utian cultures; the proto-Utian migration, one of three estimated major migrations of the Penutian-speaking peoples, entered California from the Great Basin and settled the Sacramento/San Joaquin Basin, likely coming in contact with existing Hokan populations after spreading further west after 2,000 BC.^{5,6} Linguistic affiliation with the Ohlone included up to seven distinct language branches.⁷

The Ohlone were semisedentary collectors and hunters of fish and game, although they probably ate primarily plant foods. Resources utilized included vegetal resources for creating nets, cords, and baskets; animal remains and shells for various tools and ornamentation; pelts and feathers for clothing and bedding; and local rock and mineral resources for tools and trading. Shellmounds were often used as major village centers by the Ohlone; however, the earliest shellmound components date to approximately 2,000 years before the arrival of the Ohlone, and the identity of the earliest inhabitants remains unclear.

The family household was the basic social unit, made up of around 15 individuals, and multiple families made up clans. Tribelets, or groups of interrelated villages under political leadership of a single headman, consisted of around 200 people and served as autonomous political units. An estimated 10,000 Ohlone lived in the Bay Area in 1770; however, by AD 1810, much of the native population and culture were destroyed by the encroachment of Europeans and the resulting impacts from disease, warfare, displacement, and the California mission system.^{8,9}

³ Nelson, N.C., 1909, Shellmounds of the San Francisco Bay Region. University of California Publications in American Archaeology and Ethnology 7(4), pages 310 to 357.

⁴ Wallace, William J., 1978, Post-Pleistocene Archaeology, 9000-2000 B.C., in Handbook of North American Indians, Volume 8: California, Robert F. Heizer, editor, Smithsonian Institution, Washington D.C.

⁵ Moratto, Michael J., 1984, California Archaeology. Academic Press, Inc., Orlando. Morris Adjmi Architects.

⁶ Hattori, Eugene M., 1982, The Archaeology of Falcon Hill, Winnemucca Lake, Washoe County, Nevada, Washington State University.

⁷ Kroeber, A. L., 1925, Handbook of California Indians, Smithsonian Institution, Washington D.C.

⁸ Levy, Richard., 1978, Costanoan, in Handbook of North American Indians, R. F. Heizer, editor, VIII: Smithsonian. Institution, Washington D.C.

⁹ Cook, Sherburne F., 1943, The Conflict between the California Indian and White Civilization, Ibero-Americana 22.

Historical Context

The Spanish and Mexican period began when Spanish explorers first arrived in the East Bay in 1770. By 1832, it is estimated that the Native American population declined by 80 percent due to conflicts and diseases brought by Europeans. Native peoples were relocated to Franciscan missions established throughout the region in efforts to convert them into Spanish citizens and to Catholicism, with highly regimented lifestyles designed to separate them from their families, culture, language, and religion.¹⁰ The lands where the EIR Study Area is located were part of the East Bay ranch holdings of Mission Dolores in present-day San Francisco, and later Mission San José in present-day Fremont. When Mexico gained independence from Spain in 1822, these mission lands were supposed to be granted to the Native Americans residing in the area; however, Mexican authorities offered generous land grants to prominent families and military officers, and by the end of 1823, private landholders had taken control of the entire East Bay shore north of San Leandro Creek.¹¹ Present-day Berkeley and surrounding areas were part of a large grant called Rancho San Antonio, where primary economic activities included cattle ranching and logging.¹²

The Spanish and Mexican period lasted until around 1848. The American period started with the California Gold Rush and California statehood in 1850. These activities drew many more settlers to the area. Anglo-American pioneers soon claimed ownership of much of the land within what was formerly the Rancho San Antonio lands. Settlement in present-day Berkeley began in the 1850s.

Native American Consultation

Pursuant to SB 18 and AB 52, UC Berkeley sent letters to representatives for the Karuk Tribe, Ohlone Indian Tribe, and North Valley Yokuts Tribe for notification of consultation opportunity for the proposed project in September 2020. As a result of this process, UC Berkeley was not notified of any TCRs within the EIR Study Area.

Housing Project #1

As described in more detail in Chapter 5.4, Cultural Resources, of this Draft EIR, the subsurface beneath the Housing Project #1 site may be considered sensitive for potentially significant prehistoric-era archaeological resources to a maximum depth of 19 feet below ground surface, based on the geological and historical background of the Housing Project #1 site. It is unlikely that important historic-period archaeological sites exist within the project site, as utilities such as city sewer and water predate most of the development within the area. Still, subsurface areas in the north-central portions of the project site were characterized as most sensitive for potentially significant historic-era resources. The first indications of development on the Housing Project #1 site include use as part of a development called West Villa Lots in 1878, and the project site has since undergone multiple redevelopments.

¹⁰ Baugher, Sherene B., 2009, Historical Overview of the Archaeology of Institutional Life, in *The Archaeology of Institutional Life*, April M. Beisaw and James G. Gibb, editors, The University of Alabama Press, Tuscaloosa.

¹¹ Milliken, Randall. 1997, Chapter 8: The Mission and Rancho Eras, 1806-1845, in "Native American History Studies for the Los Vaqueros Project: A Synthesis, Los Vaqueros Project Final Report #2," Rohnert Park.

¹² Hendry, G. W., and J. N. Bowman, 1940, *The Spanish and Mexican Adobe and Other Buildings in the Nine San Francisco Bay Counties: 1776 to about 1850*, University of California, Berkeley.

Housing Project #2

The sensitivity analysis for Housing Project #2, also described in more detail in Chapter 5.4, Cultural Resources, indicated that the Housing Project #2 site is sensitive for prehistoric-era archaeological resources to an estimated depth of approximately 12 feet below ground surface. This is due to the fact that the historic alignment of a tributary of Derby Creek may have passed through the site; proximity to freshwater is one of the most important factors in site selection for habitation. In addition, the center of the Housing Project #2 site is the area of highest sensitivity for potentially significant historic-era cultural resources. It is possible that subsurface portions of a well, if one existed, remain from the first recorded dwelling in 1878 on this portion of the property. The Housing Project #2 site has undergone multiple redevelopments since then.

5.16.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant TCR impact if it would:

1. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
 - a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or
 - b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.
2. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.16.3 IMPACT DISCUSSION

TCR-1	<p>The proposed project could cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: (i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or, (ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.</p>
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LRDP Update

As previously described in Section 5.16.1.1, Regulatory Framework, a TCR is defined under AB 52 as a site, feature, place, cultural landscape that is geographically defined in terms of size and scope, sacred place, or object with cultural value to a California Native American tribe that is either included or eligible for inclusion in the California Register or included in a local register of historical resources, or if UC Berkeley, acting as the lead agency, supported by substantial evidence, chooses at its discretion to treat the resource as a TCR.¹³

Following distribution of the proposed project's Notice of Preparation on April 7, 2020 to tribal representatives for the Ohlone Indian Tribe, the North Valley Yokuts Tribe, and the Karuk Tribe, UC Berkeley sent written correspondence via letters and emails on September 17, 2020, to these tribal representatives regarding the proposed project pursuant to AB 52. UC Berkeley did not receive information as a result of the tribal consultation process that the proposed LRDP Update would potentially impact a known TCR.

With the exception of the Hill Campus East where minimal change would occur under the proposed LRDP Update, the majority of the EIR Study Area is already developed, and does not currently contain known TCRs that would have the potential to be disturbed by the proposed project. However, based on the history of the EIR Study Area, as described in Section 5.16.1.2, Existing Conditions, it is possible that undisturbed and unknown TCRs exist below the ground surface. Though most of the EIR Study Area is currently developed, potential future projects under the proposed LRDP Update could result in substantial excavation at significant depths below the ground surface where no such excavation has previously occurred. Such excavation activities could disturb unidentified subsurface materials that have the potential to contain TCRs, including Native American human remains and artifacts.

Compliance with existing federal and State laws and regulations pertaining to TCRs, such as those described under Section 5.16.1.1, Regulatory Framework, would protect unrecorded TCRs in the EIR Study Area by providing for the early detection of potential conflicts between development and resource protection, and by preventing or minimizing the material impairment of the ability of archaeological deposits to convey their significance through excavation or preservation.

As part of the proposed project, UC Berkeley and future development projects would implement the cultural resource (CUL) CBP listed here, which has been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

CBP CUL-1 (Updated): UC Berkeley will follow the procedures of conduct following the discovery of human remains that have been mandated by Health and Safety Code Section 7050.5, Public Resources Code Section 5097.98 and the California Code of Regulations Section 15064.5(e) (California Environmental Quality Act [CEQA]). According to the provisions in CEQA, if human remains are encountered at the site, all work in the immediate vicinity of the discovery shall cease and necessary steps to ensure the integrity of the immediate area shall be taken. The County Coroner shall be notified

¹³ Public Resources Code Sections 21074(a)(1) and (2).

immediately. The Coroner shall then determine whether the remains are Native American. If the Coroner determines the remains are Native American, the Coroner shall notify the California Native American Heritage Commission (NAHC) within 24 hours, who will, in turn, notify the person the NAHC identifies as the Most Likely Descendant (MLD) of any human remains. Further actions shall be determined, in part, by the desires of the MLD. The MLD has 48 hours to make recommendations regarding the disposition of the remains following notification from the NAHC of the discovery. If the NAHC is unable to identify an MLD, the MLD fails to make a recommendation within 48 hours after being notified, or the landowner rejects the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to the landowner, the owner shall, with appropriate dignity, reinter the remains in an area of the property secure from further disturbance.

CBP CUL-1 would ensure that appropriate procedures are followed in order to minimize potential impacts to human remains during ground disturbance activities of development projects to the extent practicable and would therefore not create impacts to TCRs. The ongoing implementation of CBP CUL-1, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts to TCRs. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

Pursuant to the UC Berkeley Campus Design Standards described in Section 5.4.1.1, Regulatory Framework, in the event that artifacts are discovered during construction activities, the project contractor shall protect the discovered items, cease work within a 35-foot radius, and notify the owner's representative in writing. The owner may retain an archaeological consultant to evaluate findings in accordance with standard practice and applicable regulations. Artifact recovery, if deemed appropriate, would be conducted.

Though CBP-1 and Campus Design Standards would ensure impacts to Native American human remains and discovery of unearthed artifacts would be reduced, unknown artifacts or other TCRs that are not Native American human remains could exist in the EIR Study Area and could be disturbed by ground disturbing activities such as excavation. As discussed in Chapter 5.4, impacts to unknown archaeological resources would be reduced to a less-than-significant level with implementation of Mitigation Measure CuL-2. This mitigation measure establishes the procedures that UC Berkeley will implement for potential future development that would result in ground-disturbing activities where there are: 1) no known potential resources; 2) areas of high archaeological sensitivity; and 3) known archaeological resources. These procedures include that if the resource is a tribal resource, the appropriate tribe(s) will be consulted to evaluate the significance of the resource and to recommend appropriate and feasible avoidance, testing, preservation, or mitigation measures. Therefore, without implementation of this mitigation measure, impacts would be *significant*.

Impact TCR-1: Ground-disturbing activities could encounter and cause a substantial adverse change to tribal cultural resources.

Mitigation Measure TCR-1: Implement Mitigation Measure CUL-2.

Significance with Mitigation: Less than significant.

Housing Project #1

The proposed Housing Project #1 site does not currently contain any known TCRs on-site, and UC Berkeley did not receive information as a result of the tribal consultation process that the proposed LRDP Update would potentially impact a known TCR. However, development on-site could impact unknown TCRs, including Native American artifacts and human remains. UC Berkeley would implement CBP CUL-1, which would ensure impacts to TCRs that involve human remains would be less than significant. However, as described under the LRDP Update, further mitigation would be necessary for TCRs other than human remains, and therefore impacts overall would be *significant*.

Impact: Same as Impact TCR-1.

Mitigation Measure: Same as Mitigation Measure TCR-1.

Significance with Mitigation: Less than significant.

Housing Project #2

The proposed Housing Project #2 site does not currently contain any known TCRs on-site, and UC Berkeley did not receive information as a result of the tribal consultation process that the proposed LRDP Update would potentially impact a known TCR. However, development on-site could impact unknown TCRs, including Native American artifacts and human remains. UC Berkeley would implement CBP CUL-1, which would ensure impacts to TCRs that involve human remains would be less than significant. However, as described under the LRDP Update, further mitigation would be necessary for TCRs other than human remains, and therefore impacts overall would be *significant*.

Impact: Same as Impact TCR-1.

Mitigation Measure: Same as Mitigation Measure TCR-1.

Significance with Mitigation: Less than significant.

TCR-2	The proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to tribal cultural resources.
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LRDP Update

Existing federal and State regulations and proposed project goals, policies, and programs described throughout this chapter would serve to protect TCRs in the EIR Study Area. Continued compliance with these regulations would substantially decrease potential impacts to TCRs to the maximum extent practicable.

Potential future development under implementation of the proposed project, in conjunction with buildout of the region, has the potential to cumulatively impact TCRs. As previously mentioned, there are no known, existing TCRs within the EIR Study Area that would be impacted by the proposed project; potential impacts to TCRs identified within the EIR Study Area would occur from ground disturbance of unknown TCRs. UC Berkeley would implement CBP CUL-1, and Mitigation Measure TCR-1, which would ensure impacts to TCRs would be less than significant. Because the proposed project would not impact known TCRs and would reduce impacts to the maximum extent practicable, future development under implementation of the proposed project would not create or make a considerable contribution to a cumulative impact on TCRs, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is development implementing the proposed LRDP Update. These impacts are incorporated into the analysis of the LRDP Update in impact discussion TCR-2.

Significance without Mitigation: Less than significant.

5.17 UTILITIES AND SERVICE SYSTEMS

This chapter describes the potential utilities and service system impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential utilities and service system impacts, and identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts.

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the cities of Berkeley and Oakland related to utilities and service systems that UC Berkeley may consider when evaluating future development projects that implement the proposed LRDP Update, including Housing Projects #1 and #2.

5.17.1 WATER SUPPLY

5.17.1.1 ENVIRONMENTAL SETTING

Regulatory Framework

Federal

The Safe Drinking Water Act, the principal federal law intended to ensure safe drinking water to the public, was enacted in 1974 and has been amended several times. The Act authorizes the United States Environmental Protection Agency (USEPA) to set national standards for drinking water, called the National Primary Drinking Water Regulations, to protect against both naturally occurring and manufactured contaminants. These standards set enforceable maximum contaminant levels in drinking water and require all water providers in the United States to treat water to remove contaminants, except for private wells serving fewer than 25 people. In California, the State Water Resources Control Board (SWRCB) conducts most enforcement activities. If a water system does not meet standards, it is the water supplier's responsibility to notify its customers.

State

Urban Water Management Planning Act (Senate Bills 610 and 221)

The California Urban Water Management Planning Act, Section 10620 of the Water Code, requires all urban water suppliers in California that provide water to more than 3,000 customers or supply more than 3,000 acre-feet (AF)¹ per year to prepare and adopt an Urban Water Management Plan (UWMP) and update it every five years. The Act is intended to support efficient use of urban water supplies and requires the UWMP to compare water supply and demand over the next 20 years for normal years, dry years, and multiple dry years and to determine current and potential recycled water uses.

Senate Bill (SB) 610 and SB 221 were enacted to 1) ensure better coordination between local water supply and land use decisions and 2) confirm that there is an adequate water supply for new development. Both statutes require city and county decision-makers to review detailed information regarding water availability prior to the approval of large development projects. SB 610 requires the preparation of a water supply assessment for certain types of projects subject to the California Environmental Quality Act (CEQA). UC Berkeley is not covered under this act as a project that would require preparation of a water supply assessment.

Water Conservation Act of 2009 (Senate Bill X7-7)

The Water Conservation Act of 2009 (SB X7-7) requires all water suppliers to increase water use efficiency. The legislation sets an overall goal of reducing per capita water use by 20 percent by 2020, with an interim goal of a 10 percent reduction in per capita water use by 2015. Effective in 2016, urban retail water suppliers who do not meet the water conservation requirements established by this bill are not eligible for State water grants or loans. The SB X7-7 requires that urban water retail suppliers determine baseline water use and set reduction targets according to specified standards. It also requires that agricultural water suppliers prepare plans and implement efficient water management practices.

2018 Water Conservation Legislation (Senate Bill 606 and Assembly Bill 1668)

In 2018, the California Legislature enacted two policy bills to establish long-term improvements in water conservation and drought planning to adapt to climate change and longer and more intense droughts in California. The Department of Water Resources (DWR) and the SWRCB will develop new standards for:

- Indoor residential water use
- Outdoor residential water use
- Commercial, industrial, and institutional water use for landscape irrigation with dedicated meters
- Water loss

Urban water suppliers will be required to stay within annual water budgets, based on their standards, for their service areas and to calculate and report their urban water use objectives in an annual water use report. For example, the bills define a 55 gallon per person daily standard for indoor residential use until

¹ One acre-foot is the amount of water required to cover one acre of ground (43,560 square feet) to a depth of one foot.

2025, when it decreases to 52.5 gallons, and further decreases to 50 gallons by 2030. The legislation also includes changes to UWMP preparation requirements.

Water Conservation in Landscaping Act of 2006 (Assembly Bill 1881)

The Water Conservation in Landscaping Act (AB 1881) required DWR to update the State of California's Model Water Efficient Landscape Ordinance (MWELO) by 2009. Under AB 1881, cities and counties were required to adopt the MWELO by January 31, 2010, or to adopt a different ordinance that is at least as effective in conserving water as the MWELO.

The MWELO was revised in July 2015 via Executive Order B-29-15 to address the ongoing drought and to build resiliency for future droughts. The 2015 revisions to the MWELO increased water efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, on-site stormwater capture, and by limiting the portion of landscapes that can be covered in turf.

California Building Code: CALGreen (24 CCR Part 11)

The California Building Standards Commission adopted the nation's first green building standards in July 2008, the California Green Building Standards Code, also known as CALGreen (California Code of Regulations [CCR], Title 24, Part 11). CALGreen applies to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure in California unless otherwise indicated in the code. CALGreen establishes planning and design standards for sustainable site development, including water conservation measures and requirements that new buildings reduce water consumption by 20 percent below a specified baseline. The mandatory provisions of CALGreen became effective January 1, 2011, and the latest version, the 2019 California Green Building Standards Code, became effective on January 1, 2020. The building efficiency standards are enforced through the local building permit process.

California Plumbing Code (24 CCR Part 5)

The latest version of the California Plumbing Code was issued in 2019 and is updated on a three-year cycle. It includes new standards for plumbing fixtures, new provisions for storm drain systems, and design criteria for potable and recycled water systems.

California Health and Safety Code

A portion of the California Health and Safety Code is dedicated to water issues, including testing and maintenance of backflow prevention devices, coloring of pipes carrying recycled water, and programs addressing cross-connection control by water users.

California Water Code

The Water Code contains statutes surrounding various water-related issues including water shortage emergencies, on-site sewage treatment systems, potable water reuse, greywater systems, appropriation of water, water rights, and the establishment of California water districts. The Water Code also states that for projects subject to CEQA, cities and counties are required to identify the public water system(s) that would

serve a project and assess whether the water supply is sufficient to provide for the projected water demand associated with the project considering existing and future uses.

Mandatory Water Conservation

Following the declaration of a state of emergency on July 15, 2014, due to drought conditions, the SWRCB adopted Resolution No. 2014-0038 for emergency regulation of statewide water conservation efforts. These regulations, which went into effect on August 1, 2014, were intended to reduce outdoor urban water use and urge all California households to voluntarily reduce their water consumption by 20 percent. Water companies with 3,000 or more service connections are required to report monthly water consumption to the SWRCB. The SWRCB readopted the regulations several times until Governor Brown issued Executive Order B-40-17 in April 2017, ending the drought emergency and directing the SWRCB to rescind some of its emergency regulations but maintain the parts that prohibit wasteful water use practices until permanent requirements are in place. The wasteful water use practices that are still prohibited include: (1) the application of potable water to outdoor landscapes in a manner that causes excess runoff; (2) the use of a hose to wash a motor vehicle except where the hose is equipped with a shut-off nozzle; (3) the application of potable water to driveways and sidewalks; (4) the use of potable water in nonrecirculating ornamental fountains; and (5) the application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall. Also, urban water suppliers are still required to submit monthly water monitoring reports to the SWRCB.

University of California

University of California's Sustainable Practices Policy (2020)

In 2003, the University of California Office of the President adopted a comprehensive policy of detailed guidelines for green building design and clean energy standards (UC Sustainable Practices Policy), including an annual sustainability reporting requirement. This policy has been revised several times; the most recent version, which became effective in July 2020, commits the University of California (UC) to implementing actions intended to minimize its impact on the environment and reduce its dependence on nonrenewable energy. The policy covers the areas of green building design, clean energy, climate protection, sustainable transportation, sustainable operations, zero waste, sustainable purchasing, sustainable food services, and sustainable water systems.²

The UC's policy goal for water is to reduce growth-adjusted potable water consumption by 20 percent by 2020 and 36 percent by 2025, when compared to a three-year average baseline from fiscal year 2005–06 to fiscal year 2007–08.³ Each UC campus must develop and maintain a Water Action Plan that identifies long-term strategies for achieving these goals and creating sustainable water systems. Also, each university must identify single-pass cooling systems and constant-flow lab equipment and develop a plan for replacement.

² University of California Office of the President, 2019, Sustainable Practices Policy under the Climate Protection. <https://policy.ucop.edu/doc/3100155/SustainablePractices>.

³ University of California, 2019, Annual Report on Sustainable Practices, https://www.ucop.edu/sustainability/_files/annual-reports/sustainability_report_2019_final.pdf, accessed August 23, 2020.

UC Berkeley has already met the 2025 goal of 36 percent reduction from baseline in per capita potable water consumption. The water usage rate in 2019 was 34 gallons/day per UC Berkeley water user, which is a 39 percent reduction from the baseline rate of 56 gallons/day/UC Berkeley user.⁴

UC Berkeley Campus Drought Response Program

UC Berkeley implements several water conservation measures as part of its drought response program. These measures include:

- Reducing irrigation on the Campus Park to no more than two days per week. Some lawns are watered no more than once week and are expected to go mostly dormant.
- Identifying several campus lawns for conversion from grass to landscaping that uses less water.
- Identifying lawn areas for conversion to mulch area only. Irrigation to these areas will be turned off and mulch placed during the late spring/summer.
- Emptying several fountains on campus.
- Pressure washing sidewalks, stairs, patios, and courtyards as needed for health and safety reasons. When outdoor areas are cleaned, non-potable well water is primarily used.
- Exploring opportunities to capture nonpotable water for dust control during construction.
- Reducing irrigation of grass turf to no more than twice a week. Water is applied to artificial turf as needed for safety and cleaning.
- Exploring opportunities for conversion of grass to synthetic turf.
- Continuing water conservation outreach efforts across campus.
- Identifying several water-saving projects for existing labs and pursuing funding to carry out these infrastructure/system improvements.
- Repairing, replacing, and upgrading the irrigation system at the University of California Botanical Garden. The garden is also a resource for the community on waterwise gardening, providing information and plant details for those interested.
- Reducing irrigation of lawns at People's Park to no more than once a week.
- Limiting water for green (living) roofs to no more than twice a week.
- Installing 1.5-gallon-per-minute shower heads in residence halls and replacing bathroom fixtures in the Channing Bowditch and Ida Jackson Halls.⁵

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design

⁴ UC Berkeley, 2020, Water Campus User Worksheet.

⁵ UC Berkeley, 2020, Drought Response, <https://capitalstrategies.berkeley.edu/drought-response#irrigation>, accessed August 24, 2020.

Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues.

Section 33 of the UC Berkeley Campus Design Standards details the requirements governing the installation, operation, and maintenance of utility systems on campus. Design standards for water distribution piping, fire service mains, and water distribution equipment are under this section.

UC Berkeley also complies with the UC Facilities Manual, which includes policies, procedures, and guidelines for planning, design, construction contracting, and facilities management.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to water supply as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their effectiveness and potential to result in an adverse physical impact later in this chapter under Section 5.17.1.3, Impact Discussion.

Local

EBMUD 2015 Urban Water Management Plan

In compliance with the Urban Water Management Planning Act and The Water Conservation Act of 2009, the East Bay Municipal Utility District (EBMUD) adopted its current Urban Water Management Plan (2015 UWMP) in June 2016. All urban water suppliers are required to prepare, adopt, and file a UWMP with DWR every five years. The 2015 UWMP describes water demands, water supply sources, and supply reliability for its service area in five-year increments for average years, single-dry years, and multiple-dry years. The UWMP also provides water supply contingency planning in case of shortage emergencies, demand management measures to increase water use efficiency, and current and planned water conservation efforts.

In preparation of the 2020 update to the UWMP, EBMUD issued the 2050 Demand Study in July 2020, which provides water demand forecasts for its service area through 2050.⁶ Water demand within the multifamily and institutional land use categories is expected to increase by 80 percent or more by the year 2050. The demand study will be used to forecast future water demand for the EBMUD service area in the 2020 UWMP, which will be issued in 2021.

⁶ Hazen & Sawyer, 2020, East Bay Municipal Utility District 2050 Demand Study, dated July 2020.

EBMUD Water Supply Management Program 2040 Plan

EBMUD prepared the Water Supply Management Program (WSMP) 2040 plan to identify and recommend solutions to meet dry-year water needs through the year 2040. The WSMP 2040 advocates performance objectives for EBMUD's water planning, to the benefit of its customers and the environment. The WSMP 2040 continues the EBMUD's commitment to water management solutions by extending and expanding the current goals for rationing, conservation, and recycled water through 2040. Supplemental supply components are identified to ensure that EBMUD will reliably provide water to its customers into the future without extreme burden from rationing.⁷

EBMUD Water Conservation and Service Regulations

EBMUD will provide new or expanded water service to customers only when all applicable water-efficiency measures have been installed. Applicants requesting water service must supply plumbing and landscaping plans for review and approval from EBMUD's Water Conservation Division. For indoor water use, applicants must comply with CALGreen. For outdoor water use, applicants must submit landscape plans, irrigation plans and schedule, and water budget calculations, as per EBMUD's Section 31, Water Efficiency Regulations.

Existing Conditions

LRDP Update

Water Supply Sources

EBMUD supplies water to parts of Alameda and Contra Costa counties, including UC Berkeley. Approximately 1.4 million people are currently served by EBMUD's water system in a 332-square-mile area extending from Crockett to the north; San Lorenzo, Castro Valley and San Ramon to the south; San Francisco Bay to the west; and Walnut Creek to the east.⁸

Surface Water

The EBMUD water supply system collects, transmits, treats, and distributes high-quality water from its primary water source, the Mokelumne River. The Mokelumne Aqueducts convey the Mokelumne River supply from Pardee Reservoir across the Sacramento-San Joaquin River Delta to local storage and treatment facilities. After treatment, water is distributed to the incorporated cities and unincorporated communities in Alameda and Contra Costa counties within EBMUD's service area. EBMUD has water rights that allow for delivery of up to a maximum of 325 million gallons per day (MGD) from the Mokelumne River, subject to the availability of Mokelumne River runoff, water rights of other users, and downstream fishery flow requirements.

⁷ East Bay Municipal Utility District, 2012, Water Supply Management Program 2040 Plan, https://www.ebmud.com/index.php/download_file/force/674/1403/?wsmp-2040-revised-final-plan.pdf, accessed August 23, 2020.

⁸ East Bay Municipal Utility District, 2016, 2015 Urban Water Management Plan, https://www.ebmud.com/index.php/download_file/force/3908/1402/?UWMP-2015-BOOK-FINALweb_secure.pdf, accessed August 23, 2020.

EBMUD's secondary water supply source is local runoff from the East Bay area watersheds, which is stored in the terminal reservoirs within EBMUD's service area. The availability of water from local runoff depends on hydrologic conditions and reservoir storage availability. Local runoff, on average, supplies the East Bay with 15 to 25 MGD during normal hydrologic years and with almost no runoff during dry hydrologic years.

During drought conditions the Mokelumne River and local runoff cannot meet EBMUD's customer demands, even with mandatory water use restrictions. Furthermore, EBMUD's Mokelumne River supply is expected to be reduced as demands on the Mokelumne River increase from the growing needs of users in Amador, Calaveras, and San Joaquin counties with water rights that predate those of EBMUD.

EBMUD has identified additional sources of water supply to meet long term demand. In 1970, EBMUD executed a contract with the United States Bureau of Reclamation (USBR) for delivery of Central Valley Project water from the American River. EBMUD's current contract with USBR provides for delivery of up to 133,000 AF in a single qualifying year, not to exceed a total of 165,000 AF in three consecutive qualifying years.⁹ In addition, EBMUD is partnering with the Placer County Water Agency on developing a long-term transfer agreement and is working with the Yuba County Water Agency on opportunities to purchase transfer water during dry years. EBMUD has also completed Phase 1 of the Bayside Groundwater Project that enables EBMUD to inject drinking water into the East Bay Plan groundwater basin during wet years and extract, treat, and distribute the groundwater as a supplemental supply during drought periods. EBMUD also reached an agreement with Contra Costa Water District to use storage space in the recently expanded Los Vaqueros Reservoir, with the option of purchasing up to 2,000 acre-feet of water.

Recycled Water

Currently EBMUD supplies recycled water for irrigation, industrial cooling, and toilet flushing. The recycled water system currently provides approximately 9 MGD to customers in the cities of Alameda, Richmond, San Ramon, Oakland, and Albany, with plans to expand to 20 MGD by 2040. Currently, no recycled water is provided to the City of Berkeley or UC Berkeley, although there are plans to extend a recycled water pipeline into the City of Berkeley along San Pablo Avenue.¹⁰ Although Phase 2 of EBMUD's Recycled Water Master Plan includes the extension of the recycled water distribution system to UC Berkeley,¹¹ subsequent conversations with EBMUD indicate that this is not likely to occur.¹²

Water Supply Infrastructure

East Bay Municipal Utility District

⁹ East Bay Municipal Utility District, 2016, 2015 Urban Water Management Plan, https://www.ebmud.com/index.php/download_file/force/3908/1402?UWMP-2015-_BOOK-FINALweb_secure.pdf, accessed August 23, 2020.

¹⁰ East Bay Municipal Utility District, 2016, 2015 Urban Water Management Plan, https://www.ebmud.com/index.php/download_file/force/3908/1402?UWMP-2015-_BOOK-FINALweb_secure.pdf, accessed August 23, 2020.

¹¹ Woodard & Curran, 2018, Recycled Water Master Plan Update, East Bay Municipal Utility District, Final Interim Report.

¹² EBMUD and UC Berkeley, 2020. Conference call with David Rehnstrom of EBMUD, UC Berkeley staff and PlaceWorks on November 11, 2020.

EBMUD's water supply system consists of a network of reservoirs, aqueducts, pipelines, water treatment plants, pumping plants, and other distribution facilities and pipelines that convey Mokelumne River water from Pardee Reservoir to EBMUD customers. The Orinda Water Treatment Plant serves all or parts of the cities of Alameda, Albany, Berkeley, El Cerrito, Emeryville, Moraga, Oakland, Orinda, Piedmont, Richmond and San Leandro. The plant has maximum capacity of 200 MGD.¹³

After the water is treated at one of the water treatment plants, it is distributed throughout EBMUD's service area, which is divided into more than 130 pressure zones ranging in elevation from sea level to 1,450 feet above mean sea level. Approximately 50 percent of treated water is distributed to customers purely by gravity. The water distribution network includes 4,200 miles of pipe, 125 pumping plants, and 165 water distribution reservoirs.¹⁴ UC Berkeley is in EBMUD's Berryman, Stonewall, and Summit pressure zones.

UC Berkeley Campus

Potable water is supplied to UC Berkeley by EBMUD. UC Berkeley maintains the water system that serves the Campus Park, the Hill Campus West, and the Hill Campus East to meet domestic and firefighting demands. The UC Berkeley water system obtains water from EBMUD at three locations. Water is obtained directly from the EBMUD line on Grizzly Peak Boulevard to serve UC Berkeley's domestic water needs. Water is also obtained from the EBMUD reservoir to supply Hill Campus East, which includes the fire suppression system and pumping station, the Mathematical Sciences Research Institute, the Botanical Gardens, and other Hill Campus East facilities. A third connection point is at the corner of Stadium Rim Way and Centennial Drive that maintains back pressure. The primary UC Berkeley water main is aligned along the full length of Centennial Drive from Grizzly Peak Boulevard to Stadium Rim Way and supplies all UC Berkeley facilities along the way, including the Botanical Gardens and the Lawrence Hall of Science.

Potable water is supplied by EBMUD to the Campus Park water system at six locations. This system has three interconnected pressure zones separated by closed valves, pressure-reducing stations, and check valves. Additionally, several direct connections from EBMUD to campus buildings (primarily around the perimeter of the Campus Park) are separate from the UC Berkeley-owned water system.

Distribution pipes range from 4 to 12 inches in diameter, and most of the water pipes are polyvinyl chloride, cast iron, cement-lined steel, or ductile iron. The oldest pipes in the system date back to the 1890s and are assumed to be in poor condition, which likely contributes to leaks and approximately 5 percent of the water supplied by EBMUD being unaccounted for.¹⁵ Unaccounted-for water also includes water used for hydrant testing, firefighting, and water main flushing.

The Clark Kerr Campus domestic and fire water system is served by connections from EBMUD mains in the surrounding streets. A significant portion of the Clark Kerr Campus is connected into EBMUD's higher-

¹³ East Bay Municipal Utility District, 2020, Water Treatment, <https://www.ebmud.com/water/about-your-water/water-quality/water-treatment/>, accessed December 10, 2020.

¹⁴ East Bay Municipal Utility District, 2016, 2015 Urban Water Management Plan, https://www.ebmud.com/index.php/download_file/force/3908/1402/?UWMP-2015-_BOOK-FINALweb_secure.pdf, accessed August 23, 2020.

¹⁵ Sherwood Design Engineers, 2020, Memorandum UC Berkeley LRDP and Campus Master Plan.

pressure zone (Summit pressure zone), and the remaining portions of the Clark Kerr Campus are served by connections along Derby Street (Stonewall or Berryman pressure zones), Warring Street (Stonewall pressure zone) and Dwight Way (Stonewall pressure zone). The rest of the EIR Study Area is served directly from the EBMUD water system via individually metered connections.¹⁶

UC Berkeley Water Supply Review Policy

During the preliminary project design stage for a new development project, staff from the UC Berkeley Facilities Services, Engineering and Technical Services requests the project design engineer to ensure that the proposed project would not adversely impact the delivery of water within the affected zone and that the current infrastructure is adequate to supply the proposed facility. If water supply is inadequate, the water system is upgraded to provide adequate water flow and pressure to the project site.

UC Berkeley Water Conservation Programs

Implementation of UC Berkeley water conservation programs has resulted in a net decrease in water consumption of 36 percent over the last 13 years, even with expanded development and an increase in the number of students and faculty. Key conservation efforts include:

- Installing interior retrofits with water efficient fixtures, such as low flow shower heads, toilets, and urinals.
- Conducting education and behavioral change initiatives, such as campaigns to change laundry habits.
- Identifying the largest water users, such as laboratories, and monitoring water use with water meters, changing lab policies, and improving the efficiency of cooling towers.
- Installing smart water irrigation systems for over 90 percent of the landscaped areas, using weather stations to control valves and sprinklers, and converting lawns to meadows.
- Taking inventory of all cooling towers and providing upgrades and repairs, including cooling loop conversions to eliminate once-through cooling water use.
- Incorporating landscape features that reduce the need for irrigation and installing various low-impact development stormwater features.

UC Berkeley Campus Infrastructure Master Plan

The 2015 Campus Infrastructure Master Plan (CIMP), prepared by West Yost and Associates, did not identify any major water system or pipeline capacity issues. The largest concern identified was the replacement of old pipes that could cause leaks, system disruptions, and the potential for flooding or unintentional runoff into nearby creeks. The CIMP recommends a renewal and replacement (R&R) plan focused on replacing the oldest cast iron and cement-lined steel pipes as well as replacing smaller-diameter laterals during planned new construction or renovations. Details regarding the R&R plan for water infrastructure improvements are provided in the 2015 CIMP.¹⁷

¹⁶ Sherwood Design Engineers, 2020, Memorandum UC Berkeley LRDP and Campus Master Plan.

¹⁷ West Yost Associates, 2015, University of California Berkeley Campus Infrastructure Master Plan, Final Report.

Housing Project #1

Housing Project #1, also called the Helen Diller Anchor House, is within the City Environs Properties in Downtown Berkeley, as shown in Chapter 3, Project Description, of this Draft EIR. The Housing Project #1 site is a rectangular, 0.92-acre site currently occupied by residential apartments, the UC Berkeley shuttle garage, and commercial rental space including a former bicycle store, food cart, and car rental agency.

The potable water system that supplies the site is owned and operated by EBMUD. The existing water mains surrounding the site include three water mains along Oxford Street, an eight-inch steel main along University Avenue, and six-inch cast iron mains on Berkeley Way and Walnut Street.¹⁸ Engineering drawings indicate that the project would connect to the 12-inch water main beneath Oxford Street via three 8-inch water pipelines.¹⁹

Housing Project #2

Housing Project #2 is a 2.8-acre site on a UC Berkeley-owned parcel within the City Environs Properties. The site currently includes garden plots, a central lawn area, a small restroom and park office building, a community-built stage, and a basketball court.

Existing water mains adjacent to the project site include six-inch water lines beneath Haste Street and Dwight Way and a four-inch water main beneath Bowditch Street. Preliminary engineering drawings indicate that the proposed project would be served by a six-inch domestic water line, an eight-inch fire water line, and a two-inch irrigation line. A greywater system is being considered to supplement the irrigation water supply.²⁰

5.17.1.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact related to water supply services if it would:

1. Require or result in the relocation or construction of new or expanded water facilities, the construction or relocation of which could cause significant environmental effects.
2. Not have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.
3. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

¹⁸ BKF, March 22, 2019, UC Berkeley Student Housing Due Diligence Report.

¹⁹ BKF Engineers, 2020, Helen Diller Anchor House. Civil Engineering Drawings.

²⁰ BKF Engineers, 2020, University of California, Berkeley, People's Park Housing Project: Detailed Project Program.

5.17.1.3 IMPACT DISCUSSION

UTIL-1	Implementation of the proposed project would not require or result in the construction of new water facilities or expansion of existing facilities, the construction of which would cause significant environmental effects.
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LRDP Update

Existing Water Demand

In 2018, the UC Berkeley campus water demand was 594 million gallons, which includes the EIR Study Area: the Campus Park, the Hill Campus West, the Hill Campus East, the Clark Kerr Campus, and the City Environs Properties. The UC policy goal is to reduce the growth-adjusted per capita water use by 20 percent by 2020 and by 36 percent by 2025, as compared to a three-year average baseline for fiscal years 2005–06 through 2007–08. UC Berkeley has already reached both per capita water use reduction goals. The 2018 per capita campus water user rate is 34 gallons/day as compared to the baseline average of 56 gallons/day.²¹

Approximately 60 percent of the total water use by UC Berkeley within the EIR Study Area is within the Campus Park. Water use varies from year to year, with water use increasing in hotter, drier years because of an increased demand for irrigation and cooling. However, UC Berkeley water demand in general has decreased over time in response to water conservation efforts, even though the UC Berkeley population has increased.

Domestic water provided to buildings, including laboratories, within the EIR Study Area accounts for approximately 49 percent of the total water usage, and housing facilities account for about 27 percent. The cogeneration plant uses about 13 percent of the total water supplied, landscape irrigation accounts for 6 percent, and mechanical heating and cooling accounts for 5 percent.²²

Projected Water Demand

Implementation of the proposed project would have a significant impact if it would result in the need to construct new water treatment facilities or expand existing facilities and the construction of these facilities would have a significant effect on the environment. Impacts on water were assessed by comparing existing water supplies against the increase in water demand associated with implementation of the proposed LRDP Update. Under the proposed project, water demand would increase throughout the EIR Study Area as a result of increases in the student population, and the resulting increases in building square footage and increases in housing for students, faculty, and support staff.

To determine baseline conditions, the water usage data for UC Berkeley in 2018 were used, as shown in Table 5.17-1, Existing Water Demand: 2018 Water Usage Data.

²¹ University of California Berkeley, 2020, Water Campus User Worksheet.

²² Sherwood Design Engineers, 2020, 2018 UCB Campus Water Use Breakdown.

TABLE 5.17-1 EXISTING WATER DEMAND: 2018 WATER USAGE DATA

Land Use	Water Demand (gallons/day)	Water Demand (Mgal/year)	Percentage of Total (%)
Irrigation (Campus Park)	102,740	37.5	6
Mechanical Cogeneration Plant (Campus Park)	210,959	77.0	13
Academic Life and Campus Life Facilities (Campus Park)	584,932	213.5	36
Academic Life and Campus Life Facilities (Other/City Environs Properties)	212,603	77.6	13
UC Berkeley Housing (City Environs Properties, Clark Kerr Campus, Hill Campus West)	434,247	158.5	27
Mechanical Cooling (Campus Park)	82,740	30.2	5
Total	1,628,219	594.3	-

Source: East Bay Municipal Utility District, 2018. Customer Information System, Consumption Report by Association University of California.

A water demand factor was calculated for academic life and campus life facilities based on the data provided in Table 5.17-1. Because the housing category is a large water use, it was considered separately so that an accurate account of the proposed housing increase could be evaluated. Also, the water demand for the cogeneration plant was considered separately, because information provided by UC Berkeley indicates that a new dry low emission turbine would be installed imminently and would save over 25 million gallons of water each year. The water demands for the remaining land use categories were summed and divided by the existing square footage of all the buildings in the EIR Study Area, resulting in a water demand factor of 0.07 gallons/day/square foot.

This water demand factor was used to calculate the increase in water demand with the proposed LRDP Update buildout. It should be noted that this factor includes irrigation, water usage at all buildings and laboratories, and mechanical cooling demand and is assumed to remain constant between 2018 and 2036. As noted previously, water consumption in 2018 had decreased by 36 percent over the previous 13 years. Therefore, the water demand factor is conservative and does not account for likely water conservation measures associated with new development and redevelopment pursuant to the proposed LRDP Update.

The housing water use factors were obtained from UC Berkeley and reflect 2018 water meter data for residence halls and apartments occupied by undergraduates, graduates, faculty, and support staff. The average water usage for residence halls and apartments was 30 gal/bed/day and 50 gal/bed/day, respectively.²³ Because the future housing mix would be solely apartments, the housing factor of 50 gal/bed/day was used for this water demand evaluation. It is conservatively assumed that the water use would occur over 365 days/year and does not account for water conservation measures that would be required as part of the CALGreen building code and Leadership in Energy and Environmental Design (LEED) certification.

²³ UC Berkeley, 2020, RSSP Water Annual Usage Spreadsheet. Water meter information for 2017-2019 for residence halls and apartments.

To evaluate the future water demand with the proposed LRDP Update buildout, the net increase in building square footage for each area was obtained from Table 3-1, Proposed LRDP Update Buildout Projections, in Chapter 3, Project Description. The residential square footage was not included since it was calculated separately, and the parking lot square footage was not included because there is no water demand associated with this land use. The result is provided in Table 5.17-2, Increase in Water Demand: LRDP Update Buildout.

TABLE 5.17-2 INCREASE IN WATER DEMAND: LRDP UPDATE BUILDOUT

Zone	Building Square Footage	Water Demand (gallons/day)	Water Demand (Mgal/year)
Campus Park	2,423,025	169,612	61.9
Cogeneration Plant	--	142,466 ^a	52.0
Hill Campus West	22,000	1,540	0.6
Hill Campus East	192,500	13,475	4.9
Clark Kerr Campus	46,253	3,238	1.2
City Environs Properties	507,349	35,514	13.0
<i>Subtotal</i>	<i>3,191,128</i>	<i>365,845</i>	<i>133.5</i>

	Number of Beds	Water Demand (gallons/bed/day)	Water Demand (Mgal/year)
Housing Component	11,731	50	214.1
Total			348

Notes:

a. Calculated as 2018 water usage of 77 million gallons/year minus water savings of 25 million gallons/year with new turbine.

Source: PlaceWorks, 2020.

The increased water demand for the LRDP Update buildout is 348 Mgal/year or approximately 1,067 acre-feet/year. This represents a 58 percent increase from the 2018 water demand.

The EBMUD 2015 UWMP is currently being updated and UC Berkeley is coordinating with EBMUD to capture the proposed LRDP Update buildout in the updated UWMP. EBMUD also indicated that the water demand associated with the LRDP Update was accounted for in the 2015 UWMP.²⁴ The current 2015 UWMP states that the water demand for the EBMUD service area in 2035 is approximately 229 MGD or 256,500 acre-feet per year (AFY) and the available supply can meet this demand. The increased demand with the proposed LRDP Update buildout of 1,067 AFY would be about 0.4 percent of the total water demand, as shown on Table 5.17-3, Water Demand vs Supply: Year 2035. According to the 2015 UWMP, there would be enough supply available to accommodate 1 water demand in the EBMUD service area for normal years with no rationing and a single dry year or the first year of a multi-year drought with 7 percent rationing. During the second year of a drought with 20 percent rationing, there would be a slight deficit in the water supply

²⁴ East Bay Municipal Utility District, 2021, Letter from David Rehnstrom, Manager of Water Distribution Planning Division to UC Berkeley, dated February 8, 2021.

and there would be a shortage in the water supply for the third year of a multiyear drought, even with 20 percent rationing. It should be noted that the EBMUD supply and demand numbers provided in Table 5.17-3 will change when the revised 2020 UWMP is published and there may no longer be a deficit in the water supply in 2035 during drought conditions with the addition of supplemental water sources.

TABLE 5.17-3 WATER DEMAND VS SUPPLY: YEAR 2035

	Water Demand (AFY)
UCB 2018 Existing Demand	1,824
UCB Demand with LRDP Update Buildout	2,891
Increase in Demand with LRDP Update Buildout	1,067
EBMUD Service Area Demand in 2035 – Normal Year	256,500
EBMUD Service Area Demand in 2035 – Single Dry Year with rationing	238,600
EBMUD Service Area Demand in 2035 – Second Dry Year with rationing	206,100
EBMUD Service Area Demand in 2035 – Third Dry Year with rationing	205,000
	Water Supply (AFY)
2035 EBMUD Water Supply – Normal Year	256,500
2035 EBMUD Water Supply – Single Dry Year with 7 percent rationing	239,700
2035 EBMUD Water Supply – Second Dry Year with 20 percent rationing	205,000
2035 EBMUD Water Supply – Third Dry Year with 20 percent rationing	181,500

Source: PlaceWorks, 2020, and EBMUD 2015 Urban Water Management Plan.

With a combination of water conservation measures and acquisition of supplemental supplies, EBMUD should be able to accommodate water demand in normal, single dry years, and multiple dry years. As stated previously, the LRDP Update buildout has been included in the 2015 UWMP. In addition, the projected water demand for the proposed LRDP Update buildout is conservative because it does not account for continued water conservation efforts by UC Berkeley and the installation of low-flow fixtures in all new buildings and apartments per the CALGreen building code.

Furthermore, the Orinda Water Treatment Plant has maximum capacity of 200 MGD. The proposed LRDP Update's increased demand of 348 Mgal/year or approximately 1 MGD amounts to less than 1 percent of the plant's capacity and will not have an adverse effect on the plant's operation.

Future development under the proposed LRDP Update would also require the implementation of water-efficient fixtures under the California Plumbing Code and EBMUD's regulations for new water connections. UC Berkeley will continue to implement the UC Policy on Sustainable Practices pertaining to water sustainability and implementation of the Water Action Plan, which contains water conservation and water efficiency strategies. To request water service from EBMUD, plumbing and landscaping plans must be submitted to EBMUD's Water Conservation Division for review and approval and must meet EBMUD's Section 31 Water Efficiency Requirements for both indoor and outdoor water use.

The Infrastructure, Resiliency, Emergency Systems Element of the proposed LRDP Update includes the following infrastructure systems and resilience and emergency systems objectives:

- Upgrade campus infrastructure to support existing and future facility needs, and coordinate infrastructure planning with other campus planning efforts.
- Implement water conservation measures designed to reduce potable and non-potable water consumption in campus buildings and landscapes to meet and strive to exceed UC Sustainable Practices Policy water conservation requirements. Consider water reuse strategies when non-potable water use is appropriate.
- Plan new or replacement infrastructure systems to support the physical campus's resilience and ability to adapt to current and future climate change impacts, including increased drought, storm intensity, and flood frequency.

As part of the proposed project, UC Berkeley and future development projects would implement the utilities and service system (USS) CBPs listed here:

- **CBP USS-1:** For development that increases water demand, UC Berkeley will continue to evaluate the size of existing distribution lines as well as pressure of the specific feed affected by development on a project-by-project basis, and necessary improvements will be incorporated into the scope of work for each project to maintain current service and performance levels. The design of the water distribution system, including fire flow, for new buildings will be coordinated among UC Berkeley, the East Bay Municipal Utility District, and the City of Berkeley Public Works Department and Fire Department.
- **CBP USS-2:** UC Berkeley will continue and expand programs retrofitting plumbing in high-occupancy buildings and seek funding for these programs from the East Bay Municipal Utility District or other outside parties as appropriate.
- **CBP USS-3:** UC Berkeley will continue to incorporate specific water conservation measures into project design to reduce water consumption and wastewater generation. This could include the use of special air-flow aerators, water-saving shower heads, flush cycle reducers, low-volume toilets, weather-based or evapotranspiration irrigation controllers, drip irrigation systems, and the use of drought resistant plantings in landscaped areas, and collaboration with the East Bay Municipal Utility District to explore suitable uses of recycled water.
- **CBP USS-4:** UC Berkeley will analyze water and sewer systems on a project-by-project basis to determine specific capacity considerations for both UC Berkeley systems and off-site municipal systems in the planning of any project proposed under the LRDP.

Adherence to these CBPs would promote water conservation and ensure that UC Berkeley considers water facility infrastructure as future development projects are implemented. In addition, UC Berkeley will continue to map its water, wastewater, and storm drain utilities and develop comprehensive models to determine existing and future capacities and deficiencies, as resources allow. The ongoing implementation of CBP USS-1 through CBP USS-4 and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts associated with water facilities. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction and short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects. Adherence to CBPs would ensure that EBMUD would

have adequate capacity for the proposed increases in water flows within the EIR Study Area. Therefore, no new water facilities or expansion of existing facilities would be required, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

Housing Project #1 would include the construction of a mixed-use building with approximately 146,600 square feet of space devoted to campus life, retail and office suites, and miscellaneous land use. The proposed project would also house 770 students in 245 apartments with a total of 770 beds (see Table 3-5, Proposed LRDP Update Housing Program).²⁵ It is assumed that the residential water demand rate would be 50 gal/bed/day, and it is conservatively assumed that the apartments would be occupied for 365 days/year. Table 5.17-4, Increase in Water Demand: Housing Project #1, shows a total demand increase of 17.8 Mgal/year or 55 AFY.

TABLE 5.17-4 INCREASE IN WATER DEMAND: HOUSING PROJECT #1

Land Use	Proposed Buildout	Water Demand Factor	Days/year	Mgal/year
Nonresidential	146,600 SF	0.07 gallons/day/SF	365	3.7
Residential	770 beds	50 gal/bed/day	365	14.1
Total				17.8

Source: PlaceWorks, 2020 and UC Berkeley Water Usage Data Spreadsheets.

Housing Project #2 would include the construction of two new mixed-use buildings with a combination of residential, campus life, academic life, and uses not operated by UC Berkeley. The proposed Housing Project #2 would include a net increase of 143,240 square feet of nonresidential space and 1,312 beds (see Table 3-7, Housing Project #2 Proposed Development).²⁶ A conservative rate of 50 gal/bed/day for 365 days/year is assumed for residential use. Housing Project #2 would result in an increase of 27.6 Mgal/year or 85 AFY (as shown in Table 5.17-5, Increase in Water Demand: Housing Project #2).

²⁵ The non-residential use (146,600 square feet) is calculated as the sum of the square footage for the campus life land use (22,600 SF), retail and office suites (23,000 SF), and miscellaneous (101,000 SF).

²⁶ The nonresidential use (143,240 square feet) is calculated as the sum of the campus life land uses (12,000 SF), academic life land uses (7,000 SF), public land uses (3,500 SF) and miscellaneous (120,740 SF).

TABLE 5.17-5 INCREASE IN WATER DEMAND: HOUSING PROJECT #2

Land Use	Proposed Buildout	Water Demand Factor	Days/year	Mgal/year
Nonresidential	143,240 SF	0.07 gallons/day/SF	365	3.7
Residential	1,312 beds	50 gal/bed/day	365	23.9
Total				27.6

Source: PlaceWorks, 2020.

The increased water demand for the proposed LRDP Update buildout provided in Table 5.17-2, Increase in Water Demand: LRDP Update Buildout, includes the water demand for Housing Projects #1 and #2 under the City Environs Properties. As discussed previously, EBMUD has the available water supplies to meet the demands of its customers in 2036 under normal conditions and during drought years with rationing. The proposed LRDP Update buildout is included in EBMUD's 2015 UWMP and the revised 2020 UWMP will provide new water demand and supply numbers, which would include water conservation measures and supplemental water supplies that could eliminate or reduce the need for rationing during drought years. Additionally, these projected water demands for Housing Projects #1 and #2 are conservative, because the demand factors are based on 2018 water usage rates, which include many of the older, more inefficient UC Berkeley buildings. For new construction, adherence to the CALGreen Building Code Standards, the California Plumbing Code, EBMUD's regulations, and the UC's sustainable policy practices would result in lower water usage than estimated in the tables above. UC Berkeley's drought response program would also promote water conservation efforts and reduce water consumption. Additionally, new water connections to EBMUD's water system would require compliance with EBMUD's Section 31 Water Efficiency Regulations. Preliminary project designs would be reviewed by the Facilities Services, Utilities Engineering Office to determine if the existing water supply is adequate at the point of connection.

The analysis provided above indicates that EBMUD will have adequate supply for the proposed increase in water demand within the LRDP Planning Area, which includes Housing Projects #1 and #2. In addition, CBPs USS-1, USS-3, and USS-4 will be implemented for these projects. Therefore, no new water facilities or expansion of existing facilities would be required, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

UTIL-2	Implementation of the proposed project would have sufficient water supplies available from existing entitlements, conservation plans and resources, and would not require new or expanded entitlements.
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LRDP Update

As described in impact discussion UTIL-1, implementation of the proposed LRDP Update would have a significant impact if there were insufficient water supplies available to serve the proposed project from existing entitlements and resources, or new or expanded entitlements are needed. The proposed project

would result in a water demand increase of 1,067 AFY at full buildout. This projected water demand is approximately 0.4 percent of the total water demand within the EBMUD service area and, according to EBMUD, this increase has been accounted for in the 2015 UWMP.²⁷

The 2015 UWMP states that there will be enough water supply to accommodate its service area customers in 2035 for normal years and single dry years. During the third year of a multiyear drought, EBMUD projected a shortage of 24,000 acre-feet, even with 20 percent rationing restrictions. However, EBMUD has identified supplemental water supply sources that will enable EBMUD to meet long term demand. EBMUD has contracted to obtain water from the Central Valley Project, purchase water from Placer County Water Agency and Yuba County Water Agency during dry years, and extract stored groundwater from the East Bay Plain groundwater basin during drought periods. In addition, EBMUD has the option of purchasing up to 2,000 acre-feet per year of water from the recently expanded Los Vaqueros Reservoir and is planning to expand its recycled water service from 8.9 MGD to 18 MGD in 2035.²⁸ Therefore, new or expanded entitlements would not be required with implementation of the proposed LRDP Update.

In addition, UC Berkeley will continue to implement water conservation measures and sustainable policy goals to reduce water use within the EIR Study Area. Development pursuant to the proposed LRDP Update would be required to install low-flow plumbing fixtures in accordance with the CALGreen Building Code Standards and the California Plumbing Code. EBMUD would require verification that the project meets its Section 31 water efficiency requirements prior to approving the water connection to its network. UC Berkeley also implements sustainable policy practices related to water conservation and has developed a drought response strategy. Although there are plans to extend EBMUD's recycled water pipeline system to the City of Berkeley in the future, it is not certain whether the pipeline would be extended to serve the Campus Park. Nevertheless, UC Berkeley is pursuing water reuse opportunities and implementation strategies, such as the reuse of UC Berkeley wastewater to meet nonpotable water demands.

In summary, buildout associated with the proposed LRDP Update would not result in a shortage of water supplies from EBMUD or require new or expanded entitlements, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

Housing Project #1 would result in a water demand of 55 AFY at project buildout, and Housing Project #2 would have a water demand of 85 AFY, for a total water demand of 140 AFY. This amounts to 0.05 percent of the total water demand within the EBMUD service area. The increased water demand for the proposed LRDP Update buildout, including the water demand for Housing Projects #1 and #2, has been accounted for in the 2015 UWMP, as confirmed by EBMUD and EBMUD will be able to supply water to all customers in 2035. EBMUD has identified supplemental water supply sources that will enable EBMUD to meet long term

²⁷ East Bay Municipal Utility District, 2021, Letter from David Rehnstrom, Manager of Water Distribution Planning Division to UC Berkeley dated February 8, 2021.

²⁸ EBMUD, 2015, 2015 Urban Water Management Plan.

demand and is currently in the process of preparing the 2020 UWMP. Furthermore, the projected water demand for Housing Projects #1 and #2 does not account for the reduction in water use due to implementation of the CALGreen Building Code Standards, the California Plumbing Code, and EBMUD's water efficiency regulations. The UC's sustainable policy practices and UC Berkeley's drought response strategy would further reduce water consumption. EBMUD would have adequate capacity to supply its customers with water in 2035, as described previously, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

UTIL-3	Implementation of the proposed project, in combination with past, present and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to water supply.
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LRDP Update

The discussion below addresses two aspects of cumulative impacts: (1) would the effects of the cumulative development result in a cumulatively significant impact on the resources in question and, if that cumulative impact is likely to be significant, (2) would the contributions to that impact from the proposed project, which is the subject of this Draft EIR, be cumulatively considerable?²⁹

This section analyzes potential impacts to water supply that could occur from the proposed project in combination with other reasonably foreseeable projects in the surrounding area. The geographic scope of this cumulative analysis is the EBMUD service area, and the analysis is based on EBMUD's current UWMP. While the proposed project would contribute to an increased demand for water supply, the increased demand would not exceed the long-term supply under normal years or a single dry year. The 2015 UWMP states that the water demand in the second year of a multiyear drought can be met with 20 percent rationing. With a combination of water conservation measures and acquisition of supplemental supplies, EBMUD can provide adequate water service even in the third year of a drought.³⁰

The 2020 UWMP, which is currently being prepared, will account for future development within EBMUD's service area and the resultant increases in demand based on population projections. The 2020 UWMP would also clarify whether supplemental supplies detailed in the 2015 UWMP have been acquired. Furthermore, with implementation of SB X7-7 and State, regional, and local water conservation ordinances, all new development would be required to conserve water use and implement water efficiency measures.

Overall, cumulative water demands would neither exceed planned levels of supply nor require building new water treatment facilities or expanding existing facilities beyond what is currently planned. In addition, future development located within the City Environs Properties would be required to pay connection fees to EBMUD, which would offset the costs of system maintenance and capital upgrades to support the new

²⁹ CEQA Guidelines Section 15064(h)(1), "cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past, current, and probable future projects.

³⁰ Conversation with David Rehnstorm, Manager of Water Distribution Planning Division, East Bay Municipal Utilities District, November 30, 2020.

development in the EBMUD service area. Together, existing regulations, proposed policies, and other considerations would ensure that cumulative impacts with respect to water supply under the proposed project would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. Cumulative impacts from Housing Projects #1 and #2 are incorporated into the cumulative impact analysis of the proposed LRDP Update.

Significance without Mitigation: Less than significant.

5.17.2 WASTEWATER

5.17.2.1 ENVIRONMENTAL SETTING

Regulatory Framework

Federal

Clean Water Act

The Clean Water Act of 1972 regulates the discharge of pollutants into watersheds throughout the nation. It is the primary federal law that governs water pollution and is implemented by the USEPA. Under the Clean Water Act, the USEPA sets wastewater standards and makes it unlawful to discharge pollutants from a point source into any navigable waters without obtaining a permit. Point sources include any conveyances, such as pipes and man-made drainage channels, from which pollutants may be discharged.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program was established as part of the Clean Water Act to regulate municipal and industrial discharges to surface waters of the United States. Federal NPDES permit regulations have been established for broad categories of discharges, including point-source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify effluent and receiving water limits on allowable connections and/or mass emissions of pollutants contained in the discharge; prohibitions on discharges not specifically allowed under the permit; and provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities. Wastewater discharge is regulated under the NPDES permit program for direct discharges into receiving waters and by the National Pretreatment Program for indirect discharges to a sewage treatment plant.

State

State Water Resources Control Board

On May 2, 2006, the SWRCB adopted Statewide General Waste Discharge Requirements (WDR) (Order No. 2006-0003-DWQ) and a monitoring and reporting program (Order No. WQ-2013-0058-EXEC) for all publicly owned sanitary sewer collection systems in California with more than one mile of sewer pipes. The order provides a consistent statewide approach to reducing sanitary sewer overflows (SSO). The WDRs require public agencies that own or operate sanitary sewer systems to develop and implement sewer system management plans (SSMP) and report all SSOs to the SWRCB's online reporting system. The SWRCB has delegated authority to nine Regional Water Quality Control Boards (RWQCB) to enforce these requirements within their regions.

The San Francisco Bay RWQCB (Region 2) issues and enforces NPDES permits in the EIR Study Area. NPDES permits allow the RWQCB to regulate where and how waste is disposed, including the discharge volume and effluent limits of waste and the monitoring and reporting responsibilities of the discharger. The RWQCB is also charged with conducting inspections of permitted discharges and monitoring permit compliance.

The SWRCB is in the process of issuing new WDRs that will supersede Order 2006-003-DWQ.³¹ The new WDRs will require the reporting and mitigation of spills that result from the exfiltration (exiting) of sewage from the sanitary sewer system through cracks in pipes, misaligned joints, seepage through porous materials, or other means, to groundwater, the ground surface, or a surface water of the State. The SSMP is required to assess any portion of the sanitary sewer system within the vicinity of a receiving water with a bacteria-related impairment on the most recent Section 303(d) list to determine if exfiltration is potentially contributing to the impairment. The Emergency Response Plan in the SSMP must also address the potential for exfiltration as well as sewer system overflows.

Sanitary District Act of 1923

The Sanitary District Act of 1923 (Health and Safety Code Section 6400 et seq.) authorizes the formation of sanitation districts and enables the sanitation districts to construct, operate, and maintain facilities for the collection, treatment, and disposal of wastewater.

California Government Code: Capital Facilities Fees

Section 54999 of the California Government Code states that any public agency providing utility service to another public agency after July 21, 1986, may charge a capital facilities fee. However, the imposition of those fees on school districts, community college districts, the California State University, the University of California, or any state agency is subject to the following limitations:

³¹ State Water Resources Control Board, 2021, Statewide Waste Discharge Requirements, General Order for Sanitary Sewer Systems. Informal Staff Draft – February 2021. Order WQ 202X-XXXX-DWQ, accessed at https://www.waterboards.ca.gov/water_issues/programs/ssso/docs/workshops/informal_staff_draft_statewide_sso_order.pdf on February 27, 2021.

- Fees would be limited to the cost of capital construction or expansion.
- Fees would be imposed only after an agreement has been negotiated by the public agency and the service provider.
- The service provider must demonstrate that the fee is nondiscriminatory, i.e., the fee must not exceed an amount determined on the basis of the same objective criteria and methodology applied to comparable nonpublic users and is not in excess of the proportionate share of the cost of the facilities of benefit to the entity property being charged, based upon the proportionate share of use of those facilities.
- The service provider must demonstrate that the amount of the fee does not exceed the amount necessary to provide capital facilities for which the fee is charged.

Pursuant to Government Code Section 54999, the payment of statutorily compliant fees constitutes adequate CEQA mitigation.

University of California

UC Berkeley Sewer System Management Plan

The SSMP is required under WDRs Order No. 2006-0003-DWQ and the SWRCB monitoring and reporting program Order No. WQ2013-0058-EXEC. The WDR stipulates that the permittees, which include UC Berkeley, must develop and implement an SSMP in order to reduce SSOs. Additionally, the SSMP provides measures to ensure efficient and effective response to overflows and implement source control measures to minimize the introduction of grease and oils and other materials that may cause blockages.³² The UC Berkeley SSMP is dated December 2020 and provides the following:

- A plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system to provide reliable service in the future.
- A program to minimize infiltration/inflow.
- A program to reduce and prevent SSOs and an overflow emergency response plan.
- A fat, oils, and grease control program.

UC Berkeley Wastewater Discharge Permit from EBMUD

The current wastewater discharge permit (No. 06600592) issued by EBMUD to UC Berkeley is dated December 30, 2020 and covers all wastewater discharges from UC Berkeley into the community sewer. UC Berkeley must comply with EBMUD's Wastewater Control Ordinance and EBMUD's Wastewater Discharge Standard Terms and Conditions. UC Berkeley cannot discharge wastewater into the community sewer system that exceeds the local effluent limitations, and there are five wastewater monitoring locations on the Campus Park to allow collection of samples. The permit requires UC Berkeley to submit the following reports to EBMUD annually:

- An updated wastewater toxics management plan or self-certification that the plan on file is current and is being implemented.

³² UC Berkeley CS, 2020, Sewer System Management Plan, <https://ehs.berkeley.edu/ssmp>, accessed January 26, 2021.

- An updated plan for drain disposal restrictions for chemicals or self-certification that the plan on file is current and is being implemented.
- An updated slug control plan, which is designed to eliminate or minimize the potential for accidental discharge of pollutants to the sanitary sewer system, or self-certification that the plan on file is current and is being implemented.

The wastewater toxics management plan dated July 2019 incorporates all pollution prevention requirements in the permit.³³ The purpose of this plan is to prevent toxic organic chemicals or heavy metals from being discharged into the sanitary sewer system and disrupting the bacteria digesters at the EBMUD treatment plant. The plan includes an information and education program, a chemical inventory program, sink postings with drain disposal prohibitions, a photographic fixer management program, a mercury thermometer exchange program, a slug control plan, and standard operating procedures and specifications for wastewater management from UC Berkeley buildings and laboratories.

The purpose of the June 2019 Slug Control Plan is to eliminate or minimize the potential for an accidental discharge of pollutants that could reach the sanitary sewer and cause a violation of UC Berkeley's EBMUD sewer discharge permit.³⁴ The slug control plan describes procedures for identifying potential spill sources, implementing preventative measures, conducting spill response, and notifying the appropriate authorities in the event of an accidental slug discharge to the sanitary sewer. In addition, the plan presents best management practices (BMP) for preventing slug discharges to sanitary sewers. The plan applies to all UC Berkeley operations where there is a potential for slug discharges, including research and teaching laboratories, facilities operations, food preparation, construction sites, and hazardous waste accumulation areas.

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues.

Section 33 of the UC Berkeley Campus Design Standards details the requirements governing the installation, operation, and maintenance of UC Berkeley utility systems. Design standards for sewer lines, joints, fittings, and manholes are included under this section.

UC Berkeley also complies with the UC Facilities Manual, which includes policies, procedures, and guidelines for planning, design, construction contracting, and facilities management.

³³ University of California Berkeley, 2019, Wastewater Toxics Management Plan, <https://ehs.berkeley.edu/wastewater-toxics-management-plan>, accessed August 31, 2020.

³⁴ University of California Berkeley, 2019, Slug Control Plan, <https://ehs.berkeley.edu/sites/default/files/eppermitsplans/2019slugcontrolplan.pdf> accessed on January 26, 2021.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to wastewater as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their effectiveness and potential to result in an adverse physical impact later in this chapter under Section 5.17.2.3, Impact Discussion.

Local

EBMUD Wastewater Treatment Plant: NPDES Permit

The NPDES permit for EBMUD's Special District No. 1 Main Wastewater Treatment Plant and EBMUD's interceptor conveyance system was issued by the San Francisco Bay RWQCB as Order No. R2-2015-0018 (NPDES No. CA0037702), adopted on May 13, 2015. The permit details discharge prohibitions, effluent limitations on the discharge of treated wastewater to the Central San Francisco Bay, and monitoring and reporting requirements. The permit took effect on July 1, 2015, and expired on June 30, 2020. The San Francisco Bay RWQCB is in the process of issuing an updated permit that would extend until October 31, 2025.³⁵

EBMUD Sewer System Management Plan

EBMUD has developed an SSMP (May 2020) in accordance with State regulations to manage, operate, and maintain its sanitary sewer collection system. The SSMP was prepared pursuant to the requirements of SWRCB Order No. 2006-003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, and the monitoring and reporting program associated with the statewide order that was amended in July 2013 (SWRCB Order WQ-2013-0058-EXEC). The SSMP describes EBMUD's operations and maintenance program; design and performance standards; emergency response plan; SSO notification, reporting, and record keeping; and system evaluation and capacity assurance plan.

EBMUD Wastewater Control Ordinance

The EBMUD wastewater control ordinance (adopted by Ordinance No. 355-11 and amended by Ordinance No. 358-13) became effective on August 22, 2013. The purpose of the ordinance is to regulate the interception of wastewater and industrial wastes and to control wastewater that is discharged to EBMUD's wastewater disposal facilities. The regulations include provisions for source control to monitor the quantity, quality, and flow of wastewater and industrial waste. The regulations require charges for use of wastewater

³⁵ California Regional Water Quality Control Board San Francisco Bay Region, 2020, Tentative Order R2-2020-00XX, NPDES Permit CA0037702, https://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2020/September/EBMUD/tentativeorder_EBMUD.pdf, accessed December 10, 2020.

disposal facilities, which are designed to achieve an equitable recovery of the capital and operating costs of such facilities. The regulations also include provisions for enforcement and penalties for violations.³⁶

City of Berkeley Private Sewer Lateral Ordinance

The City of Berkeley passed the Private Sewer Lateral Ordinance in 2014, as encoded in the Berkeley Municipal Code, Chapter 17.24. This ordinance requires that no later than January 1, 2024, every public entity over which the City has jurisdiction shall obtain a sewer lateral certificate or otherwise demonstrate to the City that its sewer laterals are in compliance with Chapter 17.24. UC Berkeley has the discretion as a state institution to develop and implement its own plan to inspect and repair its sewer laterals, provided the program is as stringent as what is required by the 2014 consent decree between USEPA, the RWQCB, and EBMUD. UC Berkeley will implement an equivalent program with the following timelines and conditions:

- By 2025, UC Berkeley will perform a current condition assessment of all sanitary sewer laterals for properties where UC Berkeley owns and maintains the sanitary sewer lateral.
- By 2035, UC Berkeley will rehabilitate any sanitary sewer laterals that have deficiencies and will certify that each lateral is water- or airtight and free of roots, structural defects, and inflow/infiltrations.

UC Berkeley's Construction and Design Standards specify that all work must conform to the most recent editions of the California Plumbing Code (CPC). Section 712 of the CPC specifies the water and air testing methods for sewer drainage pipes and is more stringent than the testing requirements of the Berkeley Municipal Code and the Regional Consent Decree. During testing, a UC Berkeley representative in the Inspection Services department will be on-site to verify compliance with the CPC test procedures for all sanitary sewer laterals, and UC Berkeley's Division of Real Estate will approve and maintain records of test certificates.

There are two situations in which UC Berkeley does not plan to conduct lateral inspections:

- Laterals installed or rehabilitated after 2000 where records indicate that the lateral was tested to standards that meet or exceed those required by the Regional Consent Decree.
- Laterals connected to properties where demolition or significant redevelopment will commence by 2025, and the plans include installation of a new sewer lateral or rehabilitation of an existing lateral.

If any repair work encroaches on a City of Berkeley property, UC Berkeley will coordinate with the City of Berkeley to repair the sanitary sewer line.

³⁶ East Bay Municipal Utility District, 2013, Wastewater Control Ordinance, https://www.ebmud.com/index.php/download_file/force/2606/1314/?Wastewater_Control_Ordinance_8-22-2013.pdf, accessed August 23, 2020.

Existing Conditions

LRDP Update

Wastewater Collection

East Bay Municipal Utility District

EBMUD's wastewater service district is known as Special District No. 1, or SD-1, and was established in 1944. SD-1 serves approximately 685,000 people in an 88 square-mile area of Alameda and Contra Costa counties along the east shore of the San Francisco Bay, extending from Richmond in the north to San Leandro in the south. SD-1 collects domestic, commercial, and industrial wastewater for the cities of Alameda, Albany, Berkeley, Emeryville, Oakland, and Piedmont and for the Stege Sanitary District, which includes El Cerrito, Kensington, and parts of Richmond. Wastewater from the EIR Study Area ultimately discharges into the EBMUD North sewer interceptor.³⁷

EBMUD's wastewater interceptor system includes large-diameter pipelines and pumping stations. The five sewer interceptors that collect wastewater for the entire service area include 29 miles of reinforced concrete pipes ranging from 12 inches to 9 feet in diameter. They collect wastewater from approximately 1,400 miles of municipal sewers owned and operated by the communities within the SD-1 service area. These interceptors have a combined hydraulic capacity of 760 MGD. Fifteen interceptor pumping stations, ranging in capacity from 0.5 to 54.7 MGD, help to convey flows to the wastewater treatment plant.^{38,39}

EBMUD provides wastewater collection via the EBMUD sewer interceptors and provides wastewater treatment for the entire EIR Study Area. UC Berkeley pays EBMUD an annual permit fee, monitoring and testing charges, and a bimonthly wastewater treatment charge.

UC Berkeley Sanitary Sewer System

UC Berkeley operates and maintains its own sanitary sewer collection system that serves the Campus Park, the Clark Kerr Campus, the Hill Campus West, and the Hill Campus East. The two primary sewer mains that serve the Campus Park (Side Sewers #1 and #3) discharge into a 33-inch sewer line in Oxford Street that is owned and operated by the City of Berkeley. The wastewater is conveyed via the City's sewer collection system to EBMUD's North Interceptor and ultimately to EBMUD's Wastewater Treatment Plant (WWTP) for treatment. The remaining Campus Park buildings discharge via smaller collection areas into the City's sanitary sewer system at several locations along Hearst Avenue, Bancroft Way, and Piedmont Avenue. Most

³⁷ East Bay Municipal Utility District, 2016, 2015 Urban Water Management Plan, https://www.ebmud.com/index.php/download_file/force/3908/1402?UWMP-2015-BOOK-FINALweb_secure.pdf, accessed August 31, 2020.

³⁸ East Bay Municipal Utility District, 2016, 2015 Urban Water Management Plan, https://www.ebmud.com/index.php/download_file/force/3908/1402?UWMP-2015-BOOK-FINALweb_secure.pdf, accessed August 31, 2020.

³⁹ San Francisco Bay Regional Water Quality Control Board, May 13, 2015, Order No. R2-2015-0018, NPDES No. CA0037702, http://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2015/May/5a_final_to.pdf, accessed August 31, 2020.

of the wastewater from Hill Campus West discharges to Side Sewer #8 beneath Stadium Rim Way, with portions of Hill Campus West discharging to Side Sewers #1 and #3.

The UC Berkeley gravity mains consist mostly of vitrified clay pipe, cast iron pipe, polyvinyl chloride, and high-density polyethylene pipe. The older pipes tend to be vitrified clay pipe and cast iron pipe. The sewer pipelines on campus typically range from 4 to 18 inches in diameter.⁴⁰ The City's trunk sewer system consists primarily of 10-inch and larger sewer lines.⁴¹

There also is a separate UC Berkeley sewer system that collects wastewater flow from the Hill Campus East. A sewer main runs from the Field Station for the Study of Behavior, Ecology, and Reproduction building to the Math Sciences Research Institute area, then continues to the Lawrence Hall of Science. Just prior to the collection of flows from the Lawrence Hall of Science, there is a flow-level monitor in the six-inch sewer main. The sewer main collects wastewater from Lawrence Berkeley National Laboratory (LBNL) as it passes through the Lab property and continues down the hill behind the Strawberry Canyon Center where it joins the sewer main that originates at the UC Botanical Gardens and runs down Centennial Drive to Stadium Rim Way. The system collects addition flow from the Strawberry Canyon Recreation Area. The eight-inch sewer main along Centennial Drive turns south at Stadium Rim Way and ultimately discharges into the City's sewer system at the intersection of Canyon Road and Panoramic Way.⁴²

There is a low area in the middle of the Campus Park encompassing the Faculty Club and Women's Faculty Club buildings where gravity flow to the sewer system is not possible. Lift stations at each building pump flows through approximately 190 feet of force main that connect to the gravity main just south of Hildebrand Hall. On the Campus Park and the Hill Campus East, there are additional ejector pumps located within and outside of building structures.

Wastewater from the Clark Kerr Campus and the City Environs Properties discharges directly into the City sewer mains in adjacent streets.^{43,44}

The CIMP prepared for UC Berkeley in 2015 by West Yost Associates included a capacity evaluation of the existing UC Berkeley sewer collection system.⁴⁵ The results indicated that the UC Berkeley sewer system had adequate capacity for existing facilities. However, the analysis was based on dry weather flows; therefore, West Yost Associates recommended that gravity mains in UC Berkeley's collection system reserve 50 percent capacity in the sewer pipelines for wet weather and unexpected flows. Only two areas in the Campus Park collection system had flows approaching 50 percent capacity: 1) the gravity mains downstream and west of the Valley Life Sciences Building, and 2) the gravity mains south of Physics North and Physics South and Birge Hall. The CIMP recommended that, as future growth areas are identified,

⁴⁰ University of California Berkeley, 2014, Central Campus Utilities, Sanitary Sewer System.

⁴¹ RMC, 2012, City of Berkeley Sewer System Hydraulic Modeling and Capacity Assessment, Final Report. Dated October 2012.

⁴² University of California Berkeley, 2021, Information provided by Karen Bennett, Facilities Services. January 11, 2021.

⁴³ Sherwood Design Engineers, 2020, Memorandum UC Berkeley LRDP and Campus Master Plan.

⁴⁴ University of California Berkeley, 2004, Long Range Development Plan and Chang-Lin Center for East Asian Studies, Draft Environmental Impact Report.

⁴⁵ West Yost Associates, 2015, University of California Berkeley Campus Infrastructure Master Plan, Final Report.

wastewater flows that feed into parts of the system that currently use a high percentage of capacity be subjected to a more detailed capacity study.

In addition, there are surcharged (over capacity) sections of the sewer system that serve the Hill Campus East during wet weather. The surcharged sections extend from the Strawberry Canyon Recreation Area at Centennial Drive to Stadium Rim Way and to the discharge point into the City's sanitary sewer system. This capacity deficiency can be corrected by replacing the existing sewer with larger diameter pipes.⁴⁶

City of Berkeley Sanitary Sewer System

The City of Berkeley wastewater collection system serves a population of about 121,000 people in Berkeley. The City owns and operates about 254 miles of gravity sanitary sewer mains, less than one mile of force mains, six lift stations, and one pump station. In addition to serving the city, the wastewater collection system carries wastewater flows originating from sewer mains owned and operated by UC Berkeley, the Lawrence Berkeley National Laboratory, the Stege Sanitary District, and small adjacent areas of the cities of Albany and Oakland. The wastewater collection system transports wastewater from industrial, commercial, and residential sources to EBMUD's main WWTP in Oakland. During wet weather, because of increased flows caused by excessive inflow and infiltration, the wastewater also flows to EBMUD's Wet Weather Facilities.⁴⁷

UC Berkeley pays an annual wastewater collection fee to the City for discharge of wastewater from UC Berkeley's sewer system into the City's sewer system. The collection fee is used to fund the City's capital construction or expansion projects, as per Section 54999 of the California Government Code. In addition, for projects located off campus with a direct connection to the City's sewer system, UC Berkeley pays the required sewer connection fee.

Wastewater Treatment

Wastewater collected by EBMUD's sewer interceptors flows to EBMUD's WWTP at 2020 Wake Avenue in Oakland. The WWTP provides secondary treatment for a maximum flow of 168 MGD. Primary treatment can be provided for up to 320 MGD. The WWTP's NPDES permit allows for an average dry influent flow of 120 MGD. Storage basins provide temporary retention for short-term hydraulic peaks. On average, the WWTP treats approximately 63 million gallons of wastewater per day.^{48,49} EBMUD also operates three wet

⁴⁶ CS Young Engineers, Inc., 1993, University of California Berkeley Campus, Utility Infrastructure Study, Sanitary Sewer System Study, Final Report. Dated July 23, 1993.

⁴⁷ San Francisco Bay Regional Water Quality Control Board, 2020, Tentative Order No. R2-2020-XXXX, NPDES No. CA0038466, https://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2020/January/EBMUD/berkeley_cs_to.pdf, accessed December 12, 2020.

⁴⁸ East Bay Municipal Utility District, 2020, Wastewater Treatment, <https://www.ebmud.com/wastewater/collection-treatment/wastewater-treatment/>, accessed August 31, 2020.

⁴⁹ California Regional Water Quality Control Board San Francisco Bay Region, 2020, Tentative Order R2-2020-00XX, NPDES Permit CA0037702, https://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2020/September/EBMUD/tentativeorder_EBMUD.pdf, accessed December 10, 2020.

weather treatment facilities that are used to store and manage flows during wet weather events.⁵⁰ These wet weather facilities are regulated separately under Order No. R2-2014-0044.

The NPDES permit for the WWTP was issued by the San Francisco Bay RWQCB as Order No. R2-2015-0018 (NPDES No. CA0037702), which became effective in July 2015 and expired in June 2020. The San Francisco Bay RWQCB is in the process of issuing an updated permit that will extend until October 31, 2025.⁵¹ The wastewater treatment process consists of primary and secondary treatment, disinfection, dechlorination, and discharge to Central San Francisco Bay via a deep-water outfall. During peak wet weather flow conditions, the WWTP can accept up to 425 MGD. Since primary treatment capacity is 320 MGD, wet weather flows in excess of this capacity are stored on-site in an 11 MG wet weather concrete storage basin and returned to the plant when flows subside. The remainder of the primary effluent is diverted around the secondary treatment system, disinfected, and blended with secondary effluent prior to dechlorination and discharge to Central San Francisco Bay. This discharge occurs only when the maximum secondary treatment capacity of 168 MGD is exceeded.

UC Berkeley Capital Improvement Projects

The 2015 CIMP indicated that the largest concern with the campus sewer system is the age of the pipelines, which are vulnerable to root intrusion and infiltration and inflow. UC Berkeley has an ongoing long-range infrastructure rehabilitation system, as described in the SSMP. UC Berkeley's Office of Environment, Health & Safety (EH&S) maintains and implements the SSMP with assistance from Facilities Services, which is responsible for the overall operation and maintenance of the sanitary sewer system. Residential and Student Service Programs, Intercollegiate Athletics, and Associated Students of the University of California, Berkeley are responsible for the maintenance of the grease traps and/or interceptors at their respective facilities, and Capital Strategies is responsible for the design and construction of additions, rehabilitations, or modifications to the sanitary sewer system. In 2015, all of the gravity mains on the Campus Park were evaluated. The next steps in implementing the SSMP are:

- By 2020: Clean and videotape all sanitary sewer lines in the Campus Park (in progress) and include the inspection of sewer lines in the Hill Campus West and East when funding is obtained.
- By 2025: Perform an assessment of current conditions of all sanitary sewer laterals for properties owned and maintained by UC Berkeley.
- By 2035: Rehabilitate any sanitary sewer laterals with deficiencies. Ensure each lateral is water- or airtight, free of roots, structural defects, and inflow/infiltration.

The Campus Park sanitary sewer system presents an opportunity to serve nonpotable water demands to the Campus Park by intercepting, treating and reusing wastewater on-site. The CIMP estimates that Side

⁵⁰ East Bay Municipal Utility District, 2020, Sewer System Management Plan, https://www.ebmud.com/index.php/download_file/force/4317/805/?SSMP_FINAL_2020.pdf.

⁵¹ California Regional Water Quality Control Board San Francisco Bay Region, 2020, Tentative Order R2-2020-00XX, NPDES Permit CA0037702, https://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2020/September/EBMUD/tentativeorder_EBMUD.pdf, accessed December 10, 2020.

Sewers # 1 and #3 convey approximately 655,000 gallons per day or approximately 240 million gallons of wastewater per year to the City of Berkeley's sanitary sewer system.⁵² Treated and recycled wastewater could meet on-site UC Berkeley water demands for irrigation, cooling, and toilet flushing, and new buildings could be dual plumbed, thus reducing UC Berkeley's overall water demand and reducing wastewater flows.

Housing Project #1

Wastewater from Housing Project #1 would be discharged into the City's sanitary sewer system beneath the adjacent streets. There are eight-inch sewer pipelines beneath Berkeley Way, University Avenue, and Walnut Street. There is also a 27-inch sewer line beneath Oxford Street.⁵³ The engineering drawings indicate that wastewater from the site would be directed to the existing sanitary sewer beneath Oxford Street.⁵⁴

Housing Project #2

Wastewater from Housing Project #2 would be discharged into the City's sanitary sewer system along the adjacent streets. Haste Street and Bowditch Street each contain a 10-inch sewer main, and there is a 14-inch sewer main beneath Dwight Way. Preliminary information from BKF Engineers indicates that the project would be served by two 8-inch sewer laterals. Existing sewer capacity would need to be evaluated by the City of Berkeley Public Works Department to verify that the existing system can accept the wastewater generated by the project.⁵⁵

5.17.2.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact related to wastewater utilities if it would:

1. Require or result in the relocation or construction of new or expanded wastewater treatment or facilities, the construction or relocation of which could cause significant environmental effects.
2. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
3. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

⁵² Sherwood Design Engineers, 2020, Memorandum UC Berkeley LRDP and Campus Master Plan.

⁵³ BKF, 2019, UC Berkeley Student Housing Due Diligence Report.

⁵⁴ BKF Engineers, 2020, Helen Diller Anchor House, Civil Engineering Drawings.

⁵⁵ BKF Engineers, 2020, University of California, Berkeley, People's Park Housing Project: Detailed Project Program.

5.17.2.3 IMPACT DISCUSSION

UTIL-4	Implementation of the proposed project would not require or result in the relocation or construction of new or expanded wastewater treatment or facilities, the construction or relocation of which could cause significant environmental effects.
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LRDP Update

Because wastewater in the Campus Park, the Clark Kerr Campus, the Hill Campus West, and the Hill Campus East is not metered, the amount of wastewater generated under the proposed LRDP Update was determined using a similar approach as the water demand methodology. First, the consumptive water uses (irrigation, cogeneration plant, and mechanical cooling) were removed from the categories provided in Table 5.17-1, Existing Water Demand: 2018 Water Usage Data, to account for water uses that are not converted into wastewater. Also, the housing category was removed because the water usage for housing was calculated separately. The results were used to determine an indoor water usage factor in gal/day/SF for the remaining categories that would result in wastewater generation.

The gal/day/SF factor was used to determine the water demand for the academic life and campus life categories that would result in wastewater generation. The water demand factor was calculated to be 0.05 gal/day/SF, compared to the water demand factor of 0.07 gal/day/SF used in Section 5.17.1.3, which included irrigation and mechanical cooling. The calculated water demand was multiplied by a factor of 0.90 to determine the amount of wastewater generated, per the City of Berkeley's sewer discharge factor of 0.90 for educational facilities and mixed uses.⁵⁶ For the housing component, the water demand provided in Table 5.17-2, Increase in Water Demand: LRDP Update Buildout, was used, and a factor of 95 percent of the water demand was used to determine wastewater generation.⁵⁷ The results are provided in Table 5.17-6, Increase in Wastewater Demand: LRDP Update Buildout.

Implementation of the proposed project would have a significant impact if it would result in the construction or the expansion of an existing WWTP or associated facilities, the construction of which would have a significant effect on the environment.

As shown in Table 5.17-6, implementation of the proposed project would generate an additional 255 Mgal/year, or 0.70 MGD, that would be conveyed to EBMUD's WWTP. The WWTP's allowable dry weather influent flow is 120 MGD, and the WWTP has an average annual daily flow of approximately 63 MGD.⁵⁸ Therefore, the plant has a residual capacity of 57 MGD and can accommodate the increase of 0.70 MGD in wastewater generation from the proposed LRDP Update.

⁵⁶ City of Berkeley, 2020, Department of Public Works, Sewer Service Fees, https://www.cityofberkeley.info/Public_Works/Sewers_-_Storm/Sewer_Service_Fees.aspx, accessed December 7, 2020.

⁵⁷ A factor of 0.95 was used in the 2020 LRDP for multi-unit housing and is consistent with the San Francisco Public Utilities Commission flow factor of 95 percent for multifamily residential users.

⁵⁸ East Bay Municipal Utility District, 2020, Wastewater Treatment, <https://www.ebmud.com/wastewater/collection-treatment/wastewater-treatment/>, accessed August 31, 2020.

TABLE 5.17-6 INCREASE IN WASTEWATER DEMAND: LRDP UPDATE BUILDOUT

Zone	Building Square Footage	Indoor Water Demand (gal/day) ^a	Indoor Water Demand (Mgal/year)	Wastewater Demand (Mgal/year) ^b
Campus Park	2,423,025	121,151	44.2	39.8
Hill Campus West	22,000	1,100	0.4	0.4
Hill Campus East	192,500	9,625	35	3.2
Clark Kerr Campus	46,253	2,313	0.8	0.8
City Environs Properties	507,349	25,367	9.3	8.3
Total Housing Demand	--	--	214.1	203.4
Total				256

Notes:

a. Indoor water demand was calculated as 0.05 gal/day/sq ft.

b. Wastewater demand was calculated as indoor water demand multiplied by 0.90 for campus areas and indoor water demand multiplied by 0.95 for housing.

Source: PlaceWorks, 2020.

In addition, all future development projects will be designed to minimize water consumption and wastewater production. To be conservative, water conservation measures and compliance with the CALGreen Building Standards Code and LEED certification were not considered in the calculation of wastewater demand. Also, UC Berkeley is evaluating the potential to treat and reuse wastewater it generates to meet nonpotable water demands for irrigation, cooling, and toilet flushing. The capture, treatment, and reuse of wastewater flows from Side Sewers #1 and #3 could reduce the wastewater discharge to the City's sewer collection system by 655,000 gallons/day.⁵⁹

Furthermore, all potential future development that connects to the UC Berkeley sewer system would be included in the annual payment of sewer service fees to the City of Berkeley. Development in the City Environs Properties would involve a direct connection to the City's sewer system and the payment of a sewer connection fee. Future development would also pay EBMUD wastewater treatment fees. The sewer connection and wastewater collection fees are used to continually upgrade components of the wastewater collection and transmission systems through the agencies' capital improvement programs.

New sewer infrastructure would be designed, constructed, and operated in accordance with UC Berkeley's Campus Design Standards. Wastewater discharge would also meet the requirements of EBMUD's wastewater control ordinance, EBMUD Wastewater Discharge Permit for UC Berkeley (which includes the slug discharge control plan and the wastewater toxics management plan), and the UC Berkeley SSMP.

⁵⁹ Sherwood Design Engineers, 2020, UC Berkeley LRDP and Campus Master Plan Memorandum. Dated January 30, 2020.

The proposed LRDP Update includes the following objectives in the Infrastructure, Resilience, and Life Emergency Systems:

- Upgrade campus infrastructure to support existing and future facility needs, and coordinate infrastructure planning with other campus planning efforts.
- Plan new or replacement infrastructure systems to support the physical campus's resilience and ability to adapt to current and future climate change impacts, including increased drought, storm intensity, and flood frequency.

As part of the proposed project, UC Berkeley and future development projects would implement the USS CBPs listed here:

- **CBP USS-2:** UC Berkeley will continue and expand programs retrofitting plumbing in high-occupancy buildings and seek funding for these programs from the East Bay Municipal Utility District or other outside parties as appropriate.
- **CBP USS-3:** UC Berkeley will continue to incorporate specific water conservation measures into project design to reduce water consumption and wastewater generation. This could include the use of special air-flow aerators, water-saving shower heads, flush cycle reducers, low-volume toilets, weather-based or evapotranspiration irrigation controllers, drip irrigation systems, and the use of drought resistant plantings in landscaped areas, and collaboration with the East Bay Municipal Utility District to explore suitable uses of recycled water.
- **CBP USS-4:** UC Berkeley will analyze water and sewer systems on a project-by-project basis to determine specific capacity considerations for both UC Berkeley systems and off-site municipal systems in the planning of any project proposed under the LRDP.
- **CBP USS-5:** Payments to service providers to help fund wastewater treatment or collection facilities will conform to Section 54999 of the California Government Code, including, but not limited to, the following provisions:
 - Fees will be limited to the cost of capital construction or expansion.
 - Fees will be imposed only after an agreement has been negotiated by UC Berkeley and the service provider.
 - The service provider must demonstrate the fee is nondiscriminatory: i.e. the fee must not exceed an amount determined on the basis of the same objective criteria and methodology applied to comparable nonpublic users, and must not exceed the proportionate share of the cost of the facilities of benefit to the entity property being charged, based upon the proportionate share of use of those facilities.
 - The service provider must demonstrate the amount of the fee does not exceed the amount necessary to provide capital facilities for which the fee is charged.

Adherence to these CBPs would promote water conservation and ensure that UC Berkeley considers wastewater facility infrastructure as future development projects are implemented. The ongoing implementation of CBP USS-2 through CBP USS-5, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts associated with wastewater facilities. As described in Chapter 5, Environmental Analysis, while the activities

associated with these CBPs may involve temporary physical effects during construction and short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Potential future development in the EIR Study Area would not require the construction or expansion of a WWTP but could impact the City of Berkeley's sewer collection system. Depending on where new development or redevelopment pursuant to the proposed LRDP Update occurs, localized clusters may exceed the capacity of the City's subbasins to convey the wastewater. However, UC Berkeley will implement the measures described below to reduce the amount of wastewater generated by proposed LRDP Update projects and minimize the impacts to UC Berkeley's sewer system and the City of Berkeley's sewer system.

UC Berkeley has implemented an ongoing water conservation program. It already met its 2025 goal of 36 percent reduction in per capita potable water consumption over a ten-year period in 2018. A continuation of these water conservation efforts will reduce the amount of wastewater generated. In addition, adherence to the CALGreen Building Code with the installation of low-flow plumbing fixtures will minimize the amount of wastewater generated for new and redevelopment projects under the proposed LRDP Update. The continued retrofitting of existing high-occupancy buildings with water-saving plumbing fixtures will also reduce the wastewater demand.

In addition, UC Berkeley will continue with the assessment of the current condition of all sewer laterals for properties owned and maintained by UC Berkeley and the inspection and videotaping of all sewer lines within the Campus Park. UC Berkeley is currently in the process of mapping the entire UC Berkeley-owned sewer system so that a comprehensive model can be developed to determine current capacities and potential deficiencies. Also, UC Berkeley has recently installed four flow monitoring stations to monitor wastewater volumes and flow rates. Two monitoring stations are in Campus Park, one is at the corner of Stadium Rim Way and Panoramic Way, and one is at the MSRI parking lot on Hill Campus East. UC Berkeley has an ongoing, long-range, infrastructure rehabilitation system, as described in the SSMP, and also implements recommendations provided in the CIMP as funding is available.

However, there are potential capacity impacts with the discharge of wastewater from the UC Berkeley sewer system into the City's sewer system. Because UC Berkeley has no authority or jurisdiction to provide upgrades to the City sewer system, a lump sum annual fee is paid by UC Berkeley to the City to fund capital construction and/or improvement projects and upgrade its sewer system, as per Section 54999 of the California Government Code. Also, for UC Berkeley projects that are off campus with a direct connection to the City's sewer system, UC Berkeley pays a sewer connection fee. UC Berkeley pays treatment charges to EBMUD as well as an annual permit fee and monitoring and testing fees. Future development projects in the City Environs Properties would also be required to pay sewer connection and wastewater treatment fees, which would fund upgrades to the City's and EBMUD's wastewater systems through capital improvement programs.

With adherence to the CBPs listed above, reductions in wastewater flows with continued water conservation efforts, UC Berkeley efforts to upgrade and improve its sewer system, and payments to the

City of Berkeley and EBMUD for capital improvements to their sewer and WWTP infrastructure, wastewater impacts would be *less than significant*.

Significance without Mitigation: Less than significant

Housing Projects #1 and #2

The wastewater demand for Housing Projects #1 and #2 was included in Table 5.17-6, Increase in Wastewater Demand: LRDP Update Buildout, under the City Environs Properties. However, to determine potential impacts for each project separately, the following analysis was conducted. For Housing Project #1, the proposed development would result in a net increase of 146,600 square feet of campus life amenities and retail and office space. As described previously, the indoor water generation rate for these nonresidential land uses was calculated at 0.05 gal/SF/day, resulting in a total indoor water demand of 7,330 gallons/day or 2.7 Mgal/year. It is assumed that 90 percent of indoor water demand would result in wastewater generation. For residential uses, the water demand provided in Table 5.17-4, Increase in Water Demand: Housing Project #1, was multiplied by a wastewater generation factor of 95 percent to determine the wastewater demand. The results provided in Table 5.17-7, Increase in Wastewater Demand: Housing Project #1, show an increase of a project wastewater demand of approximately 16 Mgal/year.

TABLE 5.17-7 INCREASE IN WASTEWATER DEMAND: HOUSING PROJECT #1

Land Use	Indoor Water Demand Mgal/year	Wastewater Generation Factor	Wastewater Generation Mgal/year
Non-Residential	2.7	0.90	2.4
Residential	14.1	0.95	13.3
Total			15.7

Source: PlaceWorks, 2020.

Similarly, Housing Project #2 would include 143,240 square feet of nonresidential space, resulting in an indoor water demand of 7,162 gallons/day or 2.6 Mgal/year. The residential water demand was calculated to be 24 Mgal/year. The total wastewater demand for this project is 25.1 Mgal/year, as shown in Table 5.17-8, Increase in Wastewater Demand: Housing Project #2.

TABLE 5.17-8 INCREASE IN WASTEWATER DEMAND: HOUSING PROJECT #2

Land Use	Water Demand Mgal/year	Wastewater Generation Factor	Wastewater Generation Mgal/year
Non-Residential	2.6	0.90	2.4
Residential	24.0	0.95	22.7
Total			25.1

Source: PlaceWorks, 2020.

In total, implementation of proposed Housing Projects #1 and #2 would generate an additional 41 Mgal/year or approximately 0.11 MGD. As indicated above, the WWTP has a residual capacity of 57 MGD and can accommodate the increase in wastewater generation from the housing projects.

Furthermore, these two projects would pay sewer connection and wastewater collection fees to the City and EBMUD. The internal sewer system that would serve these projects would be designed, constructed, and operated in accordance with UC Berkeley's Campus Design Standards. Discharged wastewater would be coordinated with EBMUD and the City of Berkeley. CBP USS-2 through CBP USS-5 would also be implemented. Furthermore, compliance with the CALGreen Building Code and LEED certification requirements would reduce the volume of wastewater generated. To be conservative, these reductions were not included in the wastewater demand calculations. Therefore, the implementation of these housing projects would not require new or expanded wastewater treatment facilities, and the impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

UTIL-5	Implementation of the proposed project would not result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
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LRDP Update

As described under impact discussion UTIL-4, the EBMUD's WWTP is permitted by the RWQCB to treat 120 MGD during dry weather conditions and has an average annual daily flow of approximately 63 MGD. Therefore, the residual dry weather flow capacity is 57 MGD.

Implementation of the proposed project would generate an additional 0.70 MGD within the EIR Study Area. The increased wastewater demand would represent about 0.67 percent of the WWTP's excess capacity, and the average annual daily flow is well below the permitted capacity.

In addition, new projects and redevelopment projects within the EIR Study Area would be required to comply with CALGreen plumbing codes and implement active and passive water conservation measures. The reduction in water demand would also reduce the amount of wastewater generated. New projects would implement water conservation measures as part of UC Berkeley's drought response program and the UC's Sustainability Practices Policy. Future development in the City Environs Properties would also be required to pay sewer connection and wastewater collection fees. These fees would fund upgrade components of the wastewater collection and transmission systems through the agencies' capital improvements programs.

With continued compliance with applicable regulations, wastewater generated by the proposed project would not exceed the permitted capacity specified in EBMUD's NPDES permit. Also, the UC and UC Berkeley water conservation programs would ensure that potential future development would minimize impacts to wastewater collection and treatment capacity. Therefore, EBMUD would have adequate capacity

to serve the EIR Study Area’s projected demand in addition to the existing and future commitments, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

As described in impact discussion UTIL-4, the estimated wastewater demand for the proposed housing projects would be 0.11 MGD at full buildout. This is approximately 0.07 percent of the maximum permitted dry weather flow rate of 120 MGD for EBMUD’s WWTP. Since the WWTP currently has a surplus wastewater capacity of 57 MGD, the wastewater demand for the proposed Housing Projects #1 and #2 would not exceed the permitted capacity of the WWTP. Furthermore, compliance with CALGreen building codes, the California Plumbing Code, UC Berkeley’s water conservation efforts, and the UC’s Sustainability Practices Policy would ensure that new development would minimize impacts to wastewater collection and treatment capacity. Sewer connection fees and wastewater collection fees associated with new development would help fund sewer and wastewater improvement projects. Impacts related to the capacity of the WWTP would be *less than significant*.

Significance without Mitigation: Less than significant.

UTIL-6	Implementation of the proposed project, in combination with past, present, and reasonably foreseeable projects would not result in cumulatively considerable impacts with respect to wastewater service.
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LRDP Update

The discussion below addresses two aspects of cumulative impacts: (1) would the effects of the cumulative development result in a cumulatively significant impact on the resources in question and, if that cumulative impact is likely to be significant, (2) would the contributions to that impact from the project, which is the subject of this Draft EIR, be cumulatively considerable?⁶⁰ This section analyzes potential impacts related to wastewater treatment that could occur from the proposed project in combination with reasonably foreseeable growth within the service area of EBMUD.

Buildout of the EIR Study Area would generate an increase in the volume of wastewater delivered for treatment at EBMUD’s WWTP. However, the increase at buildout represents less than 1 percent of the excess available treatment capacity of the WWTP.

Furthermore, wastewater from cumulative projects is assumed in EBMUD’s capital improvement program (CIP) and master planning efforts. Master planning efforts are used to identify deficiencies and to develop prioritized recommendations for improvements. The master plans provide prioritized recommendations for capital improvements that are then considered for incorporation into EBMUD’s CIP. EBMUD develops a 10-

⁶⁰ CEQA Guidelines Section 15064(h)(1), “cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past, current, and probable future projects.

year CIP and an annual operating budget. Funding for projects, once incorporated into EBMUD's CIP, is provided through wastewater rate structure fees and bonds.⁶¹ EBMUD's Wastewater Control Ordinance would apply to all future projects within EBMUD's service area. EBMUD also has policies and procedures in place to ensure that there is adequate funding and budgetary support for operating, maintaining, and repairing the collection system. Furthermore, future development in EBMUD's service area would be required to comply with EBMUD's NPDES permit and Wastewater Control Ordinance. Therefore, with continued compliance with applicable regulations, cumulative development combined with the proposed project would not exceed wastewater collection or treatment capacities, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for Housing Projects #1 and #2 is buildout under the proposed LRDP Update. Cumulative impacts from Housing Projects #1 and #2 are incorporated into the cumulative impact analysis of the proposed LRDP Update.

Significance without Mitigation: Less than significant.

5.17.3 STORMWATER

5.17.3.1 ENVIRONMENTAL SETTING

Regulatory Framework

The regulatory framework for stormwater is described in detail in Section 5.9, Hydrology and Water Quality. The regulatory requirements that pertain solely to storm drain systems are repeated below.

Federal

Under the NPDES program, all facilities that discharge pollutants into waters of the United States are required to obtain an NPDES permit. Requirements for stormwater discharges are also regulated under this program. As previously described, the EIR Study Area lies within the jurisdiction of the San Francisco Bay RWQCB (Region 2). UC Berkeley is subject to the requirements of the General Permit for Storm Water Discharges for Phase II Small Municipal Separate Storm Sewer Systems (MS4s) as a nontraditional permittee.

⁶¹ East Bay Municipal Utility District, February 10, 2009, Sewer System Management Plan, https://www.ebmud.com/index.php/download_file/force/4317/805?SSMP_FINAL_2020.pdf, accessed December 11, 2020.

State

On April 7, 2015, the SWQCB adopted an amendment to The Water Quality Control Plan for Ocean Waters of California to control trash. In addition, the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California added the section, Part 1 Trash Provisions. Together, they are collectively referred to as “the Trash Amendments.” The purpose of the Trash Amendments is to provide statewide consistency for the RWQCBs in their regulatory approach to protect aquatic life and public health beneficial use, and reduce environmental issues associated with trash in State waters, while focusing limited resources on high trash generating areas.⁶²

The Trash Amendments apply to all Phase I and II permittees under the NPDES municipal separate storm sewer systems (MS4) permits. Compliance with the Trash Amendment requires permittees to install certified trash treatment control systems on all catch basins no later than December 2, 2030.⁶³

University of California

Strawberry Creek Management Plan

The Strawberry Creek Restoration Program began in 1987 in response to UC Berkeley and community concerns over the deteriorated environmental quality of Strawberry Creek. UC Berkeley’s Office of EH&S sponsored a comprehensive study of the creek, and the results of the study were published in December 1987 as the Strawberry Creek Management Plan. The plan provides recommendations for implementation of management strategies for point- and nonpoint-source pollution control, channel stabilization, aquatic and riparian habitat restoration, and watershed management.⁶⁴

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley campus built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues. Section 33 of the UC Berkeley Campus Design Standards details the requirements governing the installation, operation, and maintenance of utility systems on campus. Section 33.40.00 details the design standards for storm drainage utilities.

⁶² State Water Resources Control Board, April 7, 2015, Amendment to the Water Quality Control Plan for the Ocean Waters of California to Control Trash and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, https://www.waterboards.ca.gov/water_issues/programs/trash_control/docs/o1_final_sed.pdf, accessed August 31, 2020.

⁶³ State Water Resources Control Board, 2019, *Storm Water Program - Trash Implementation Program*. https://www.waterboards.ca.gov/water_issues/programs/stormwater/trash_implementation.html, accessed August 31, 2020.

⁶⁴ University of California, Berkeley, 1987, Strawberry Creek Management Plan. <https://creeks.berkeley.edu/strawberry-creek-management-plan-1987>, accessed on January 27, 2021.

UC Berkeley also complies with the UC Facilities Manual, which includes policies, procedures, and guidelines for planning, design, construction contracting, and facilities management.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to stormwater as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their effectiveness and potential to result in an adverse physical impact later in this chapter under Section 5.17.3.3, Impact Discussion.

Existing Conditions

LRDP Update

UC Berkeley Campus

The storm drain system maintained and operated by UC Berkeley encompasses the Campus Park, the Clark Kerr Campus, the Hill Campus West, and the Hill Campus East. The system consists of drain inlets, storm drainpipes, catch basins, manholes, outlets to Strawberry Creek, and culverts along the creek. Strawberry Creek serves as a critical piece of stormwater infrastructure, acting as the discharge point and conveyance feature through the Campus Park. There also is stormwater discharge to the City of Berkeley's storm drain system along Bancroft Way, Hearst Avenue, and Oxford Street. The north and south forks of Strawberry Creek converge in the Grinnell Natural Area before discharging to the City of Berkeley's storm drain system through a culvert at Oxford Street.^{65,66} The UC Berkeley storm drain system in the Hill Campus East uses drainage swales, existing creeks, and storm drainpipes, as required. Above the Strawberry Canyon Recreation Area is a stormwater high flow detention basin with a 48-inch lift gate that moderates stormwater flow through the Big Inch culvert and into the South Fork of Strawberry Creek. The system is designed so that in extreme events, if the detention basin exceeds its capacity, Centennial Drive would be the high flow overland route. Key features associated with the storm drain system in the Campus Park, the Hill Campus West, and the Hill Campus East are summarized below:

- To manage flooding, an earthen retention basin was constructed in the Hill Campus East on the South Fork of Strawberry Creek at the entrance to the Lower Jordan fire trail. The retention basin has a design storage capacity of 1.5 million cubic feet. The basin outlet controls the rate of flow into Big Inch and Little Inch culverts via a hydraulically operated slide gate.
- The Little Inch drain is a 30-inch bypass culvert constructed in 1923 to divert flow from the South Fork of Strawberry Creek beneath Memorial Stadium. The culvert runs beneath Memorial Stadium along the former natural course of the creek and discharges to an open channel next to the Women's Faculty Club that ultimately connects to the outlet of the Big Inch drain.

⁶⁵ Sherwood Design Engineers, 2020, Memorandum UC Berkeley LRDP and Campus Master Plan.

⁶⁶ West Yost Associates, 2015, UC Berkeley Campus Infrastructure Master Plan.

- The Big Inch drain is a 60- to 72-inch bypass culvert that was constructed in 1951 to provide additional capacity for stormwater flows from Strawberry Creek. It was extended in 1956 when the retention basin was constructed to its current alignment. It roughly parallels the Little Inch drain and daylights north of the Men's Faculty Club on the Campus Park.
- There is also a 34-inch culvert on the North Fork of Strawberry Creek within the Campus Park that runs under West Circle.⁶⁷ The approximately 350-foot length of culvert surfaces in the Eucalyptus Grove/Grinnell Natural Area before it joins the South Fork of Strawberry Creek.
- There also is a large storm drain system that collects flows from Lawrence Berkeley National Laboratory above Cyclotron Drive, the Foothill/Stern residences, Mining Circle, and Memorial Glade and discharges into the North Fork of Strawberry Creek north of Moffitt Library.
- Stormwater from the main portion of the Clark Kerr Campus is collected by UC Berkeley's internal storm drain network and eventually discharges to the City's storm drain system, which flows into the underground, culverted Derby Creek. Approximately 4.3 acres of the easternmost portion of the Clark Kerr Campus is in the City of Oakland. Currently, this area is natural, undeveloped terrain with hiking trails and no stormwater infrastructure.
- Stormwater from the City Environs Properties north and west of the Campus Park is collected via curbs and gutters and delivered to the City of Berkeley's storm drain system, which eventually discharges to the culverted portion of Strawberry Creek west of the campus. Similarly, stormwater from the City Environs Properties south of the Campus Park is collected by curbs and gutters and catch basins for discharge into the City's storm drain system, which eventually discharges to the culverted portion of Derby Creek.
- Stormwater from the Hill Campus East is mostly overland flow into natural ephemeral channels and is routed into either the North or South Fork of Strawberry Creek. The southeastern portion of the Hill Campus East discharges to Claremont (Harwood) Creek.

Low impact development (LID) strategies and green infrastructure have been incorporated throughout the Campus Park and the Hill Campus West to reduce the impact of impervious surfaces, enhance ecology, improve water quality, and reduce runoff. Some of the stormwater management features include:

- Restoration of Strawberry Creek within Grinnell Natural Area, including protection of creekside vegetation, creek bank stabilization, and erosion reduction efforts.
- Modification of drainage from the Dwinelle parking lot to convey runoff across a grass biofilter, and excess runoff discharges to a stormwater detention pond planted with native vegetation. These improvements enhance water quality and mitigate peak runoff into Strawberry Creek.
- Construction of interlocking permeable pavers in Wellman parking lot with an underground gravel storage layer to infiltrate runoff into the subsurface, thus improving water quality and recharging the water table.
- Installation of green roofs at the Li Ka Shing Center and the Bechtel Engineering Center to reduce runoff and improve water quality.

⁶⁷ Sherwood Design Engineers, 2020, Memorandum UC Berkeley LRDP and Campus Master Plan.

- Installation of rain gardens and vegetated swales at Blum Hall and Hearst Gym that provide stormwater filtration.
- Upgrade of the Memorial Stadium drainage system to include a mechanical stormwater filtration system that removes trash, sediment, and pollutants and improves water quality before discharge into Strawberry Creek.

The 2015 CIMP included a hydrology and hydraulics model of UC Berkeley’s storm drain system to identify areas at risk of flooding. The model assumed an increase in impervious surfaces with future development. The criteria used to determine if flooding would occur were that all storm drains should convey the 10-year storm event without surcharging above the ground surface and that Strawberry Creek should be able to convey the 100-year storm event without flooding streets or vehicles. The recommendations of the study identified five areas that discharge to Strawberry Creek that would benefit from the installation of new storm drains or the enlargement of existing storm drains.⁶⁸

UC Berkeley is exploring opportunities to move away from a piecemeal approach of implementing MS4 post-construction requirements for each individual project to a more holistic stormwater management approach that would improve the efficiency and cost effectiveness of stormwater facilities across the campus.⁶⁹ The approach would be to incorporate centralized stormwater management facilities designed to manage stormwater from larger upstream watersheds that exceed the requirements of a specific development project. These centralized projects would provide “stormwater credits” that can be used by development projects that are constrained by their ability to install stormwater facilities on-site due to issues such as density or slope. Centralized facilities also have a greater opportunity to provide additional benefits, including improved flood and drought resilience, integration with the landscape, research project laboratory opportunities, and enhanced mobility corridors.

City of Berkeley

The City of Berkeley has approximately 78 miles of storm drain pipelines ranging from six inches to six feet in diameter and constructed with a variety of materials, including metal, clay, brick and mortar, and reinforced and unreinforced concrete.⁷⁰ Portions of the storm drain system are more than 100 years old. In addition, there are approximately 1,900 catch basins and 4,000 storm inlets/outlets that divert stormwater into the storm drain system. Runoff from the City’s storm drain system is ultimately conveyed to Central San Francisco Bay.

Ongoing maintenance programs include catch basin cleaning, street/sidewalk sweeping, site inspections, testing and monitoring, runoff control from new development, and public information and participation, such as catch basin stenciling. Maintenance and improvements of the system are paid for by the City’s General Fund and through connection fees paid by new development.

⁶⁸ Sherwood Design Engineers, 2020, Memorandum UC Berkeley LRDP and Campus Master Plan.

⁶⁹ Sherwood Design Engineers, 2020, Stormwater and Green Infrastructure Supplementary Existing Conditions Analysis.

⁷⁰ City of Berkeley, 2001, Draft General Plan EIR, [https://www.cityofberkeley.info/uploadedFiles/Planning_\(new_site_map_walk-through\)/Level_3_General/4e_infrastructure.pdf](https://www.cityofberkeley.info/uploadedFiles/Planning_(new_site_map_walk-through)/Level_3_General/4e_infrastructure.pdf), accessed December 12, 2020.

Housing Project #1

Stormwater drainage from Housing Project #1 would be directed to City's storm drain system via a catch basin at the corner of the intersection of Walnut Street and University Avenue. The project would result in a net decrease in impervious surfaces (4.5 percent) and therefore would not result in significant impacts to UC Berkeley's and the City's storm drain systems. If this project is not part of a future UC Berkeley stormwater credit system, the site would include on-site stormwater treatment systems. The exact configuration and location of these BMPs will be determined with the submittal of final plans. A Preliminary Stormwater Management Plan has been prepared by BKF Engineers.⁷¹

Housing Project #2

If Housing Project #2 is not part of a future UC Berkeley stormwater credit program, the site would incorporate green infrastructure and stormwater retention areas throughout the site. Planted bioswales would capture runoff from the Central Glade area and drain it into a bioretention facility. Similar bioretention facilities would be installed along the southwest corner of the student housing building's west wing. Bioretention features are also proposed along the western and southern edges of the project site. Additional features include flow-through planters, rain gardens, vegetated roof trays, and permeable pavements installed at paths and hardscapes.⁷²

Excess stormwater would be collected via two on-site 12-inch storm drain laterals and conveyed to the City's storm drain system. There is a catch basin at the intersection of Dwight Way and Bowditch Street that connects to a 36-inch City storm drain, and there are catch basins in Haste Street that connect to an existing 10-inch City storm drain.⁷³

5.17.3.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant stormwater related impact if it would:

1. Require or result in the relocation or construction of new or expanded stormwater drainage facilities, the construction or relocation of which could cause significant environmental effects.
2. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

⁷¹ BKF Engineers, 2020, University of California Berkeley Helen Diller Anchor House. Civil Engineering Drawings.

⁷² University of California, Berkeley, 2020, People's Park Housing Project: Detailed Project Program.

⁷³ University of California, Berkeley, 2020, People's Park Housing Project: Detailed Project Program, dated June 1, 2020.

5.17.3.3 IMPACT DISCUSSION

UTIL-7	Implementation of the proposed project would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which would cause significant environmental effects.
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LRDP Update

Future development and redevelopment as part of the proposed LRDP Update could result in an increase in impervious surfaces, which in turn could result in an increase in stormwater runoff, higher peak discharges to Strawberry Creek and the storm drain system, and the potential to cause nuisance flooding in areas without adequate drainage facilities. Future development and redevelopment sites identified in the proposed LRDP Update occur mostly in urbanized and developed areas that already contain a large amount of impervious surfaces.

As part of the proposed project, UC Berkeley and future development projects would implement the hydrology (HYD) CBP listed here:

CBP HYD-13: UC Berkeley will continue to manage runoff into storm drain systems such that the aggregate effect of projects implemented pursuant to the LRDP creates no net increase in runoff over existing conditions.

With the implementation of post-construction stormwater control measures, compliance with the MS4 permit requirements, and adherence to CBP HYD-13, which states that the aggregate effect of projects under the proposed LRDP Update is no net increase in runoff over existing conditions, the amount of runoff from the proposed development sites would be less than the amount generated under existing conditions. In addition, UC Berkeley will continue to map its water, wastewater, and storm drain utilities and develop comprehensive models to determine existing and future capacities and deficiencies, as resources allow.

The ongoing implementation of CBP HYD-13 and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts associated with stormwater facilities. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

In addition, development sites that involve the disturbance of one acre or more of land would be subject to NPDES construction permit requirements, including preparation of a stormwater pollution prevention plan, which includes best management practices to limit the discharge of sediment and nonstorm water discharges from the site. All projects are required to implement source control measures to minimize runoff from pollutant-generating activities. Any project that creates and/or replaces 2,500 to 5,000 square

feet of impervious surface is required to implement site design measures that reduce runoff to the maximum extent feasible. These site design measures include stream setbacks and buffers, tree planting and preservation, rooftop drainage to permeable areas, porous pavement, green roofs, vegetated swales, and rain barrels and cisterns. Development projects that create and/or replace 5,000 square feet or more of impervious surface are required to implement site design, source control, runoff reduction, and stormwater treatment. Stormwater treatment measures must be designed to retain the volume of runoff from the 85th percentile, 24-hour storm event (volumetric criteria) or the runoff flow produced from a rain event equal to at least 0.2 inches per hour of intensity (flow criteria). Compliance with these regulatory requirements of the MS4 permit would minimize the amount of stormwater runoff from development sites within the EIR Study Area. In addition, UC Berkeley is in consultation with the RWQCB to develop a stormwater credit program, which would permit the installation of centralized stormwater management facilities at the Campus Park and the Hill Campus West that would exceed the MS4 regulatory requirements and further minimize the amount of stormwater runoff associated with LRDP Update buildout.

Compliance with the regulatory provisions in the Phase II Small MS4 permit and CBP HYD-13 would ensure that the implementation of the proposed LRDP Update would not result in increases in runoff that would require the construction of new storm drain facilities or expansion of existing facilities, the construction of which would cause significant environmental impacts. Compliance with CBP HYD-13 would ensure that the aggregate effect of UC Berkeley development projects proposed under the LRDP Update would result in no net increase in runoff over existing conditions.

Further, the proposed LRDP Update includes the following objectives in the Infrastructure, Resilience, and Life Safety Element and the Resilience and Emergency Systems Element includes the following objectives:

- Upgrade campus infrastructure to support existing and future facility needs, and coordinate infrastructure planning with other campus planning efforts.
- Enhance the health of Strawberry Creek and campus stormwater systems by implementing green infrastructure strategies, such as stormwater detention, bio-retention, rain gardens, rainwater harvesting, smart irrigation, green roofs, and permeable pavement.
- Plan new or replacement infrastructure systems to support the physical campus's resilience and ability to adapt to current and future climate change impacts, including increased drought, storm intensity, and flood frequency.

Therefore, there would be no net increase in stormwater runoff from UC Berkeley projects to the City's storm drain system. In addition, UC Berkeley is planning for several capital improvement projects that include creek and watershed restoration projects and decentralized green infrastructure, as discussed in Section 5.17.3.2, that would reduce stormwater runoff. UC Berkeley would also continue to repair, rehabilitate, and upgrade its storm drain system through implementation of the CIMP. Therefore, impacts with respect to stormwater infrastructure would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

Housing Project #1 would result in a net decrease in impervious surfaces by 4.5 percent compared to existing conditions. Therefore, the project would not increase stormwater runoff or peak flow rates compared to existing conditions. In addition, if the project is not part of the campuswide stormwater credit program, the project site would implement on-site stormwater treatment measures that would comply with the MS4 permit requirements and result in a reduction in stormwater runoff compared to existing conditions.

The proposed redevelopment would comply with the requirements of the Phase II MS4 Permit and implement LID BMPs and site design BMPs, which effectively minimize the impact of impervious surfaces by retaining or detaining stormwater on-site, decreasing surface water flows, and slowing runoff rates. In addition, UC Berkeley manages runoff into storm drain systems so that the aggregate effect of new projects creates no net increase in runoff over existing conditions. Adherence to these regulatory requirements would minimize the amount of stormwater runoff and would not result in the need to construct or expand the existing storm drain system. Thus, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Housing Project #2 would involve the construction of two new mixed-use buildings that include student and affordable and supportive housing. Over 50 percent of the project would be devoted to open space; however, there would be a net increase of approximately 62,000 square feet in impervious surfaces compared to existing conditions.

The project would include green infrastructure and stormwater retention areas throughout the site. Planted bioswales would capture runoff from the Central Glade area and drain into a bioretention facility. Similar bioretention facilities would be installed along the southwest corner of the student housing building's west wing. Bioretention features are also proposed along the western and southern edges of the project site. Additional features include flow-through planters, rain gardens, vegetated roof trays, and permeable pavements installed at paths and hardscapes.⁷⁴ If the stormwater credit program is approved by the RWQCB, some of these measures may be replaced with centralized stormwater management facilities at the Campus Park and the Hill Campus West that would exceed the MS4 regulatory requirements and further minimize the amount of stormwater runoff associated with LRDP Update buildout.

Excess stormwater would be collected via on-site, 12-inch storm drain laterals and conveyed to the City of Berkeley's storm drain system. A catch basin at the intersection of Dwight Way and Bowditch Street connects to a 36-inch City storm drain, and catch basins in Haste Street connect to a 10-inch City storm drain.⁷⁵ UC Berkeley also manages runoff into storm drain systems, pursuant to CBP HYD-13, so that the

⁷⁴ University of California, Berkeley, 2020, People's Park Housing Project: Detailed Project Program, dated June 1, 2020.

⁷⁵ University of California, Berkeley, 2020, People's Park Housing Project: Detailed Project Program, dated June 1, 2020.

aggregate effect of new projects implemented under the proposed LRDP Update would result in no net increase in runoff over existing conditions. Compliance with the F.5.g provisions of the Phase II Small MS4 permit and CBP HYD-13—that the aggregate effect of new projects would not create stormwater runoff in excess of existing conditions—would minimize the amount of stormwater runoff generated by new development and would not result in the need to construct new or expand existing storm drains. Thus, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

UTIL-8	Implementation of the proposed project, in combination with past, present and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to stormwater infrastructure.
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LRDP Update

Most of the UC Berkeley campus, including the Campus Park, the Hill Campus West, and the Hill Campus East, lies within the Strawberry Creek watershed (see Figure 5.9-1, Watersheds in the EIR Study Area, in Chapter 5.9, Hydrology and Water Quality, of this Draft EIR); the Clark Kerr Campus and portions of the City Environ Properties lie within the Potter Creek and Temescal Creek watersheds. The analysis of cumulative storm drainage impacts considers future development in these three watersheds that encompass the EIR Study Area. Cumulative impacts can occur when impacts that are significant or less than significant from a proposed project combine with similar impacts from other past, present, or reasonably foreseeable future projects in a similar geographic area. Cumulative impacts could result from incremental changes that contribute to drainage and stormwater infrastructure problems in the watersheds.

Development in the EIR Study Area would require conformance with State, local, and UC Berkeley policies that would reduce hydrology and infrastructure construction impacts to less than significant levels. More specifically, potential changes related to stormwater flows, drainage, impervious surfaces, and flooding would be minimized by the implementation of stormwater control measures, retention, infiltration, and LID measures to reduce potential stormwater drainage and flooding impacts.

All cumulative projects in the watershed areas would be subject to applicable permit requirements, various municipal codes and policies, Alameda County and Contra Costa County ordinances, and numerous water quality regulations that control construction-related and operational discharge of pollutants in stormwater. The water quality regulations implemented by the San Francisco Bay RWQCB take a basinwide approach and consider water quality impairment in a regional context. For example, the NPDES Construction Permit ties receiving water limitations and basin plan objectives to terms and conditions of the permit. UC Berkeley manages its stormwater systems under the Phase II Small MS4 permit, and the cities of Berkeley, Oakland, and Emeryville manage their stormwater systems under the Municipal Regional Phase I MS4 permit. Both permits require the adoption of site design, source control, and treatment control measures to minimize the impact and amount of stormwater runoff from new development or redevelopment projects. For these reasons, impacts from future development within the watershed related to stormwater infrastructure construction are not cumulatively considerable. In combination with past, present, and reasonably

foreseeable projects, proposed development and redevelopment within the watersheds would result in a *less-than-significant* cumulative impact with respect to stormwater infrastructure.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for proposed Housing Projects #1 and #2 is buildout under the proposed LRDP Update. Cumulative impacts from Housing Projects #1 and #2 are incorporated into the cumulative impact analysis of the proposed LRDP Update.

Significance without Mitigation: Less than significant.

5.17.4 SOLID WASTE

5.17.4.1 ENVIRONMENTAL SETTING

Regulatory Framework

Federal

The Resource Conservation and Recovery Act of 1976 (Title 40 of the Code of Federal Regulations), Part 258, contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the federal landfill criteria. The federal regulations address the location, operation, design, groundwater monitoring, and closure of landfills.

State

California Integrated Waste Management Act of 1989 (Assembly Bill 939 and Senate Bill 1322)

California's Integrated Waste Management Act of 1989 (AB 939 and SB 1322) set a requirement for cities and counties throughout California to divert 50 percent of all solid waste from landfills as of January 1, 2000, through source reduction, recycling, and composting. AB 939 also required cities and counties to prepare integrated waste management plans and a source reduction and recycling element to be submitted to the Department of Resources Recycling and Recovery (CalRecycle).

CalRecycle oversees, manages, and tracks all the waste generated in California. It promotes the use of new technologies to divert resources away from landfills. CalRecycle also provides grants and loans to help California cities, counties, businesses, and organizations meet the state's waste reduction, reuse, and recycling goals. It also provides funds to clean up solid waste disposal sites and co-disposal sites, including facilities that accept hazardous waste substances and nonhazardous waste. In addition, CalRecycle develops, manages, and enforces waste disposal and recycling regulations.

In 2007, SB 1016 amended AB 939 to establish a per capita disposal measurement system based on a jurisdiction's reported total disposal of solid waste divided by the jurisdiction's population and expressed as

pounds per day (lb/day) per resident and per employee. CalRecycle sets a target per capita disposal rate for each jurisdiction. Each jurisdiction must submit an annual report to CalRecycle with an update of its progress in implementing diversion programs and its current per capita disposal rate.

While the University of California is exempt from compliance with this act, UC Berkeley waste materials may be counted against the diversion percentages of the city of origin, in this case, the City of Berkeley. UC Berkeley remains committed to continuing and improving waste reduction and minimization efforts, which are detailed in this section under the heading, “University of California,” below.

State Agency Buy Recycled Campaign

The State Agency Buy Recycled Campaign (SABRC) is a joint effort between CalRecycle and the Department of General Services to implement State laws requiring State agencies and the Legislature to purchase recycled-content products and track those purchases. It complements the intent of the Integrated Waste Management Act to reduce the amount of waste going to California’s landfills. An annual report detailing State agencies’ annual purchase of recycled-content products is due to CalRecycle by October 31 of each year.⁷⁶

California Global Warming Solutions Act of 2006 (Assembly Bill 32)

AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020, a reduction of approximately 15 percent below emissions expected under a “business as usual” scenario. Pursuant to AB 32, the California Air Resources Board must adopt regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. The full implementation of AB 32 will help mitigate risks associated with climate change, improve energy efficiency, expand the use of renewable energy resources and cleaner transportation, and reduce waste.

Organic Waste Methane Emissions Reduction Act (Senate Bill 1383)

In September 2016, SB 1383 established methane emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants in various sectors of California’s economy. SB 1383 established goals to reduce the landfill disposal of organics by achieving a 50 percent reduction in the 2014 level of statewide disposal of organic waste by 2020 and a 75 percent reduction by 2025. SB 1383 granted CalRecycle the regulatory authority to achieve the organic waste disposal reduction targets and establishes an additional target—that at least 20 percent of currently disposed edible food be recovered for human consumption by 2025. Methane emissions resulting from the decomposition of organic waste in landfills are a significant source of greenhouse gas emissions contributing to global climate change. Organic materials—including waste that can be readily recycled or composted—account for a significant portion of California’s overall waste stream.

⁷⁶ CalRecycle, State Agency Buy Recycled Campaign, <https://calrecycle.ca.gov/buyrecycled/stateagenc>, accessed December 13, 2020.

SB 1383 also requires that—no later than July 1, 2020—CalRecycle and the California Air Resources Board analyze the progress that the waste sector, State government, and local governments have made in achieving the targets for reducing organic waste in landfills. Depending on the outcome of the analysis, CalRecycle is authorized to amend the regulations to include incentives or additional requirements to meet the goals.

Mandatory Commercial Recycling Requirements (Assembly Bill 341)

Assembly Bill 341 (Chapter 476) set a statewide solid waste diversion goal of 75 percent by 2020. Passed in 2011 and taking effect July 1, 2012, AB 341 mandated recycling for businesses producing four or more cubic yards of solid waste per week or multifamily residential dwellings of five or more units. Under AB 341, businesses (including public entities) and multifamily dwellings of five or more units must separate recyclables from trash and then either subscribe to recycling services, self-haul their recyclables, or contract with a permitted private recycler.

Mandatory Commercial Organics Recycling (Assembly Bill 1826)

AB 1826, which was enacted in 2014, mandated organic waste recycling for businesses and multifamily dwellings with five or more units. The commercial organics recycling law took effect on April 1, 2016. Organic waste includes food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste. As of September 2020, businesses and multifamily residences of five or more units that generate two or more cubic yards per week of solid waste (including recycling and organic waste) must arrange for organic waste recycling services. The bill requires each jurisdiction to report to CalRecycle on its progress in implementing the organic waste recycling program, and CalRecycle will review whether a jurisdiction is in compliance with the act.

Construction and Demolition Waste Materials Diversion Requirements (Senate Bill 1374)

SB 1374 requires that jurisdictions summarize their progress in diverting construction and demolition waste from the waste stream in their annual AB 939 reports. SB 1374 required CalRecycle to adopt a model construction and demolition ordinance for voluntary implementation by local jurisdictions.⁷⁷

Sustainable Packaging for the State of California Act of 2018 (SB 1335)

SB 1335 prohibits food service facilities on a State-owned facility; operating on or acting as a concessionaire on State-owned property, or under contract to provide food service to a State agency from dispensing prepared food using food service packaging unless it is reusable, recyclable, or compostable.

CALGreen Building Code

As described in Section 5.17.1.1 (Water Regulatory Setting), CALGreen establishes building standards for sustainable site development. Sections 4.408 and 5.408, Construction Waste Reduction, Disposal and

⁷⁷ CalRecycle, Sustainable Packaging for the State of California Act of 2018, <https://www.calrecycle.ca.gov/laws/rulemaking/foodservice>, accessed December 13, 2020.

Recycling, mandate that, in the absence of a more stringent local ordinance, a minimum of 65 percent of nonhazardous construction and demolition debris generated during most new construction must be recycled or salvaged. CALGreen requires developers to prepare and submit a waste management plan for on-site sorting of construction debris that:

- Identifies the materials to be diverted from disposal by recycling, reuse on the project, or salvage for future use or sale.
- Specifies if materials will be sorted on-site or mixed for transportation to a diversion facility.
- Identifies the diversion facility where the material collected can be taken.
- Identifies construction methods employed to reduce the amount of waste generated.
- Specifies that the amount of materials diverted shall be calculated by weight or volume, but not by both.

In addition, the CALGreen Building Code requires that 100 percent of trees, stumps, rocks, and associated vegetation and soil resulting from land clearing be reused or recycled.

University of California

University of California's Sustainable Practices Policy

The Zero Waste section of the sustainability practices policy calls for the following goals and practices:⁷⁸

- The university would prioritize waste reduction in the following order: reduce, reuse, and then recycle and compost.
- The university would reduce per capita total municipal solid waste generation as follows:
 - Reduce waste generation by 25 percent per capita from baseline levels by 2025, and
 - Reduce waste generation by 50 percent per capita from baseline levels by 2030
 - Divert 90 percent of municipal solid waste from the landfill.
- By 2020, the university would prohibit the sale, procurement or distribution of packaging foam, such as food containers and packaging materials, other than that utilized for laboratory supply or medical packaging and products.
- No packaging foam or expanded polystyrene (EPS) shall be used in food service facilities for takeaway containers.
- The university also seeks to reduce, reuse and find alternatives for packaging foam used for laboratory and medical packaging products.
- Each campus will reduce single-use products by taking the following actions:
 - Eliminate plastic bags in all retail and food service establishments in campus facilities or located on UC Berkeley-owned land no later than January 1, 2021
 - Replace disposable single-use plastic food accessory items in all food service facilities with reusables or locally compostable alternative by July 1, 2021
 - Provide reusable food items for food consumed onsite at dine-in facilities and to-go facilities no later than July 1, 2022

⁷⁸ University of California, 2020, Policy on Sustainable Practices

- Replace single-use plastic food items with reusable or locally compostable alternatives at to-go facilities no later than July 1, 2022
- Phase out the procurement, sale and distribution of single-use plastic beverage bottles. Non-plastic alternatives shall be locally recyclable or compostable. Foodservice facilities will provide alternatives no later than January 1, 2023.
- Locations are encouraged to prioritize the installation of water refill stations to support the transition from single use plastics to reusables.
- Locations will consider eliminating single-use plastic beverage bottles when contracting with suppliers, or upon contract renewal and/or extension if current contract terms prohibit (e.g., vending machines, departmental purchases, etc.).
- When selecting prepackaged, sealed food that is mass produced off premises and resold at University locations (e.g., grab-and-go items, such as chips, candy, prepackaged sandwiches, etc.), preference should be given in contract award and negotiations to suppliers that utilize compostable or locally recyclable packaging options.

UC Berkeley 2019 Annual Report on Sustainable Practices

The most recent UC Annual Report on Sustainable Practices is dated 2019 and describes the progress made by UC Berkeley in meeting the UC's sustainable practice policies and goals.⁷⁹ One of the five best practice awards received by UC Berkeley at the annual California Higher Education Sustainability Conference was for its efforts on zero waste curriculum and operation. The Connie and Kevin Chou Hall at Haas School of Business, the greenest academic building at UC Berkeley when it opened in 2017, earned the trifecta of green building certifications. The building achieved TRUE Zero Waste certification at the highest possible level; LEED Platinum Certification for its architectural design, construction, and energy efficiency; and WELL Certification at the Silver level for meeting health and wellness objectives. With no landfill bins in the building, a team of staff and students is working to phase out single-use, disposable materials in favor of reusable containers and supplies, and the building's on-site food vendor adheres to zero waste practices.

UC Berkeley is continually working on reducing its waste generation rates and is currently below one pound per day per capita. Approximately 52 percent of the municipal solid waste stream is diverted from landfills by recycling, composting, and reuse with the goal of 90 percent waste diversion by the end of 2020.⁸⁰ Also, UC Berkeley's Office of Sustainability & Carbon Solutions has recently created a Sustainability Training and Certification program for UC Berkeley staff, which also serves as a resource for students, faculty, and the greater Berkeley community.

⁷⁹ University of California, 2019, Annual Report of Sustainable Practices.

⁸⁰ University of California, Berkeley, 2020, Getting to Zero Waste, <https://sustainability.berkeley.edu/zero-waste>, accessed on December 3, 2020.

UC Berkeley Zero Waste Plan

UC Berkeley's Zero Waste Plan⁸¹ is an update to the 2013 UC Berkeley Zero Municipal Solid Waste to Landfill by 2020 plan. The Zero Waste Plan summarizes key zero waste programs currently implemented at UC Berkeley and outlines how these programs will be implemented and expanded to reach its zero waste goal.

The programs in the plan form a multilayered strategy that focuses on a few key components:

- Installing standardized infrastructure, including signage and bins, in UC Berkeley facilities.
- Educating the UC Berkeley community about the proper sorting of materials into bins and waste reduction and reuse best practices.
- Reducing the amount and flow of materials.
- Reusing, repairing, and recirculating usable materials.
- Upgrading the procurement process with partners to minimize waste.
- Engaging UC Berkeley partners and affiliates to adopt zero waste.
- Standardizing and institutionalizing zero waste practices and behaviors.

Zero waste planning and efforts at UC Berkeley are guided by the most current version of the University of California's Sustainability Policy.

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing buildings, infrastructure, grounds, and maintenance issues.

UC Berkeley also complies with the UC Facilities Manual, which includes policies, procedures, and guidelines for planning, design, construction contracting, and facilities management.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to solid waste as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their effectiveness and potential to result in an adverse physical impact later in this chapter under Section 5.17.4.3, Impact Discussion.

⁸¹ University of California, Berkeley, September 2019, UC Berkeley Zero Waste Plan, https://facilities.berkeley.edu/sites/default/files/2019_uc_berkeley_zero_waste_plan_final.pdf, accessed December 12, 2020.

Local

The City of Berkeley Single Use Foodware and Litter Reduction Ordinance is designed to reduce the use and disposal of single use food ware, including cups, lids, utensils, straws, clamshells, and other disposables that contribute to street litter, marine pollution, harm to wildlife, greenhouse gas emissions, and waste sent to landfills. This ordinance seeks to assist businesses with the shift away from environmentally harmful single use disposable food ware to reusable food ware.

Though this City ordinance does not directly apply, UC Berkeley supports the ordinance and has already developed on-campus catering zero waste guidelines.⁸²

Existing Conditions

LRDP Update

UC Berkeley Solid Waste Collection

UC Berkeley provides solid waste collection and recycling services to the Campus Park, the Clark Kerr Campus, and the Hill Campus West through Cal Zero Waste, which is housed in Facilities Services. Waste collection and disposal service for the Hill Campus East is managed by the Fire Mitigation Program. The City Environs Properties are also served primarily by Cal Zero Waste with the exception of a few properties that are serviced by the City of Berkeley. UC Berkeley's property on 4th Street is currently serviced by the City, but UC Berkeley is in the process of incorporating this location to its service operations.⁸³

Cal Zero Waste manages over 25 tons of solid waste that are generated throughout the campus daily and is committed to expanding recycling and composting programs while providing effective refuse collection services. It works in concert with other UC Berkeley entities such as Custodial Services for indoor waste and recycling collection and Grounds Operations for green waste and plant debris services. Cal Zero Waste operates trucks that collect UC Berkeley landfill waste, recyclables (paper and cardboard), and compost and manages most vendor contracts for off-site hauling services for landfill materials, green waste, concrete, metal roll-offs, bottle and can pick-ups, and metals. All waste materials are transported off campus to facilities for processing.

UC Berkeley has a dual-stream recycling system; paper and cardboard are collected separately from cans and bottles. UC Berkeley also has a limited recycling program that is operated by UC Berkeley's Property Management Department and includes metals, construction and demolition waste, and wood recycling. Additionally, UC Berkeley collects both pre-consumer and post-consumer organic materials to be composted at a local commercial composting facility.⁸⁴

⁸² UC Berkeley, 2020, Cal Zero Waste, <https://facilities.berkeley.edu/operating-units/campus-operations/cal-zero-waste>, accessed August 23, 2020.

⁸³ Email correspondence with Physical & Environmental Planning, University of California Berkeley, December 4, 2020.

⁸⁴ University of California Berkeley, 2019, UC Berkeley Zero Waste Plan, https://facilities.berkeley.edu/sites/default/files/2019_uc_berkeley_zero_waste_plan_final.pdf.

Solid Waste Disposal

The disposal destinations for the various material streams are provided in Table 5.17-10, Material Streams Disposal Destinations.

TABLE 5.17-10 MATERIAL STREAMS DISPOSAL DESTINATIONS

Waste Stream	Destination	Location
Mixed Paper	Berkeley Recycling Center/Community Conservation Center	Berkeley, California
Cans and Bottles	Tri-CED (via Civicorp)	Union City, California
Cardboard	Berkeley Recycling Center/Community Conservation Center	Berkeley, California
Compost	West Contra Costa Landfill	Richmond, California
	City of Berkeley Transfer Station	Berkeley, California
Landfill	Keller Canyon Landfill (via Golden Bear Transfer Station in Richmond, California)	Pittsburg, California
	City of Berkeley Transfer Station	Berkeley, California

Source: University of California Berkeley, September 2019, UC Berkeley Zero Waste Plan.

The Keller Canyon Landfill is at 901 Bailey Road in unincorporated Contra Costa County near the City of Pittsburg, California, and is under the jurisdiction of Contra Costa County. The County Local Enforcement Agency is responsible for the landfill's solid waste facility permit and its daily operations.⁸⁵

The Keller Canyon Landfill has a permitted throughput of 3,500 tons per day and is projected to continue operation until 2030.⁸⁶ In 2018, the daily throughput was 3,247 tons per day.^{87,88} Therefore, the landfill currently has a residual capacity of 252 tons per day. If UC Berkeley does not reach its goal of zero waste generation by 2030, the date that Keller Canyon Landfill is scheduled to close, there are other landfills that could accept UC Berkeley solid waste, such as Altamont Landfill, which is scheduled to close in 2070.

Solid Waste Generation

Most waste generated at UC Berkeley comes from buildings and building occupants on the Campus Park. Housing and dining buildings are the next largest generator of solid waste. Although most waste at UC Berkeley is generated from buildings, waste is also collected from outdoor spaces and venues, such as walkways, parking lots, athletic venues, and plazas.⁸⁹ The diversion of municipal solid waste from landfills at UC Berkeley had increased to 52 percent as of June 30, 2018. The amount of materials sent to the landfill

⁸⁵ City of Pittsburg, 2020, Keller Canyon Landfill, <http://www.ci.pittsburg.ca.us/index.aspx?page=978>, accessed August 23, 2020.

⁸⁶ California Department of Resources Recovery and Recycling, 2019, SWIS Facility/Site Search, <https://www2.calrecycle.ca.gov/SolidWaste/Site/Search>, accessed August 22, 2020.

⁸⁷ CalRecycle, 2019, Landfill Tonnage Reports, <https://www2.calrecycle.ca.gov/LandfillTipFees/>, accessed August 22, 2020.

⁸⁸ Based on five days per week operation (250 days per year).

⁸⁹ University of California Berkeley, 2019, UC Berkeley Zero Waste Plan, https://facilities.berkeley.edu/sites/default/files/2019_uc_berkeley_zero_waste_plan_final.pdf.

steadily decreased from 6,049 tons of solid waste in 2004 to 3,784 tons in 2018, a decrease of approximately 37 percent.⁹⁰

UC Berkeley implements a Zero Waste Buildings Program to systematically transition its buildings and facilities to a zero-waste infrastructure system where centralized recycling, composting, and landfill bins are available and standardized at major thoroughways and entrance/exits throughout the building. In addition, this program also focuses on promoting reduction, reuse, and refill practices in the building, such as encouraging the use of reusable dishware in kitchens and the procurement of recycled office supplies. Last, this program includes an educational component where departments are invited to a training led by Cal Zero Waste and building occupants can learn about how to effectively utilize the new zero waste system and become ambassadors for zero waste in their department or building.

UC Berkeley also implements an exterior bin system: Big Belly Solar Compactors program. Solar Big Bellies are compacting trash receptacles that are solar powered and are now the standard receptacle for outdoor locations at UC Berkeley. Prior to the installation of Solar Big Bellies, recycling and composting were not easily accessible options in outdoor areas. With a current total of 76 Solar Big Belly stations in strategically placed, high-traffic areas on campus, more recyclable and compostable materials are effectively captured in outdoor spaces.

UC Berkeley's ReUSE program focuses on reducing waste and preventing reusable items such as stationary, binders, books, and clothes from entering the landfill waste stream, instead recirculating them throughout the UC Berkeley community. Repair is also a key component to the practice of reuse as it focuses on fixing items to make them usable again.

Furthermore, UC Berkeley operates the Zero Waste Research Center (ZWRC) to research and implements upstream strategies for reducing waste, with a focus on purchasing, redesigning products, creating behavior change incentives, and instituting closed-loop circular economy waste systems. ZWRC houses the vermicomposting project, which focuses on developing a local solution to divert organics. Organic waste produced on campus is composted and used on-site to grow fruits and vegetables. This project includes a large worm bin at the Clark Kerr Campus to process up to 150 pounds per week of compostable waste from the dining kitchen. This compostable waste is converted into finished compost to be used in the Clark Kerr Campus residential garden to produce food for the dining common, or used by UC Berkeley Facilities Services, Landscape Services Operations.

Other programs implemented by the UC Berkeley include:

- **The Environmentally Preferred Products Program:** The goal of this program is to create a section in the UC Berkeley bookstore that highlights and promotes environmentally preferred products so that students, staff, and faculty can more easily access them, and to continue to work with the UC Berkeley

⁹⁰ Communication with UC Berkeley Office of Sustainability staff.

procurement team to develop an easy process for UC Berkeley staff and faculty to purchase, by default, environmentally preferred products.⁹¹

- **The Refreshing Refills Program:** The focus of this campaign is increasing the use and purchasing of refillable and reusable items while reducing the overall volume of single-use disposables on campus.
- **The Reuse This Program:** As part of this program, Cal Dining has begun to sell “Reuse This” zero waste kits at select locations on campus. These kits comprise a variety of reusable items: a lunch box, a cup and straw, a utensils set, a handkerchief, a snack bag, and a collapsible food container.
- **The Zero Waste Cafes and Restaurant Program:** This program is in place to implement the City of Berkeley’s Single Use Foodware Ordinance across campus.
- **The Zero Waste Events and Cal Athletics Zero Waste Initiatives Programs:** Cal Zero Waste works with event planners and caterers to ensure that events on campus are zero waste. Cal Zero Waste also works with Cal Athletics to transition athletic facilities to zero waste.

UC Berkeley also implements outreach and education programs that focus on communicating to and educating the UC Berkeley population about its zero waste goal and initiatives and the importance of reducing, reusing, recycling, and composting.⁹²

Housing Project #1

Solid waste from the Housing Project #1 site is collected by the Cal Zero Waste.

Housing Project #2

Solid waste from People’s Park is collected by Cal Zero Waste.

5.17.4.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact related to solid waste if it would:

1. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
2. Not comply with federal, State, and local management and reduction statutes and regulations related to solid waste.
3. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

⁹¹ Environmentally Preferred Products include refill products that produce less waste, are made from recycled content, promote reuse over disposal, or are part of an existing take back program.

⁹² University of California Berkeley, 2019, UC Berkeley Zero Waste Plan, https://facilities.berkeley.edu/sites/default/files/2019_uc_berkeley_zero_waste_plan_final.pdf.

5.17.4.3 IMPACT DISCUSSION

UTIL-9	Implementation of the proposed project would be served by a landfill with sufficient permitted capacity to accommodate the proposed project's solid waste disposal needs and would not generate waste in excess of State or local standards or otherwise impair the attainment of solid waste reduction goals.
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LRDP Update

The number of UC Berkeley students, faculty, and staff is projected to increase by up to 22 percent between the year 2018 and the proposed LRDP Update buildout year of 2036-37 (see Table 5.17-11, Proposed Student, Staff, and Faculty Projections). Therefore, it is conservatively assumed that the total solid waste sent to the landfill at buildout would also increase by 22 percent when compared to the 2018 generation rate, although with UC Berkeley's zero waste goal and comprehensive waste diversion programs, the actual amount of solid waste may be much lower in the future.

TABLE 5.17-11 PROPOSED STUDENT, STAFF, AND FACULTY PROJECTIONS

Year	Students	Faculty/Staff	Total
2018	39,708	15,421	55,129
2036-37	48,200	19,000	67,200

Source: University of California, Berkeley, PlaceWorks, 2020.

In 2018, UC Berkeley sent 3,784 tons to the landfill.⁹³ The projected 2036-37 rate is assumed to be 4,616 tons/year, which equates to 15 tons/day (assuming 300 disposal days/year). This would amount to approximately six percent of the current excess capacity of 252 tons/day for Keller Canyon Landfill.

The Keller Canyon Landfill facility is slated to close in 2030, at which time a new landfill would be selected. If UC Berkeley's goal of zero waste is not reached by 2030, alternate landfill sites would be selected. One of the options is Altamont Landfill in Alameda County, which is scheduled to close in 2070.

As part of the proposed project, UC Berkeley and future development projects would implement the utilities and service system (USS) CBPs listed here:

- **CBP USS-6:** UC Berkeley will continue to implement the Zero Waste requirements of the UC Sustainability Policy designed to reduce the total quantity of campus solid waste that is disposed of in landfills.
- **CBP USS-7:** In accordance with the CalGreen Code, and as required for Leadership in Energy and Environmental Design certification, contractors working for UC Berkeley will be required under their contracts to report their solid waste diversion according to UC Berkeley's waste management reporting requirements.

⁹³ Communication with UC Berkeley Office of Sustainability staff.

CBP USS-6 and CBP USS-7 would promote waste reduction and ensure adherence to applicable solid waste requirements. The ongoing implementation of CBP USS-6 and USS-7, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts associated with solid waste facilities. The activities associated with these CBPs would not involve physical effects that would have the potential to create significant environmental impacts.

Furthermore, potential future development pursuant to the proposed LRDP Update would comply with the 2019 CALGreen Building Code Standards, which require that at least 65 percent of nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse. Development would also comply with the requirements of AB 341, which mandates recycling for commercial and multifamily residential land uses. Additionally, potential future development that generates organic waste in amounts over a certain threshold would be mandated to recycle organic matter in accordance with AB 1826 and reduce organic waste generation in line with SB 1383. Food services facilities would comply with SB 1335, and reportable purchases would abide by the requirements of the SABRC. Future development would also comply with the City's Single Use Foodware Ordinance and the University of California's Sustainability Practices Policy, and UC Berkeley will continue to implement the programs specified in the Zero Waste Plan. Therefore, solid waste facilities would be able to accommodate project-generated solid waste, and impacts would be less than significant. The proposed LRDP Update would not generate solid waste in excess of State or local standards or otherwise impair the attainment of solid waste reduction goals, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

Since the total population within the EIR Study Area would be 67,200 at buildout and the projected solid waste sent to the landfill was conservatively estimated to be 4,616 tons/year (based on 2018 waste generation rates), this equates to a generation rate of 0.07 tons per capita per year, which was used to determine the amount of waste generated by proposed Housing Projects #1 and #2. Table 5.17-12, Proposed Student, Staff, and Faculty Projections: Housing Projects #1 and #2, indicates that Housing Projects #1 and #2 would generate 58 tons/year and 96 tons/year, respectively, for a total of 154 tons/year or 0.51 tons/day. This amounts to less than 1 percent of the current excess capacity of 252 tons/day for the Keller Canyon Landfill.

TABLE 5.17-12 PROPOSED STUDENT, STAFF, AND FACULTY PROJECTIONS: HOUSING PROJECTS #1 AND #2

	Students	Employees	Solid Waste Generation Rate (tons/capita/year)	Solid Waste Generated (tons/year)
Housing Project #1	770	60	0.07	58
Housing Project #2	1,312	57	0.07	96
Total	2,082	117	-	154

Source: University of California, Berkeley, PlaceWorks, 2020.

The proposed housing projects would comply with the 2019 CALGreen Building Code Standards, the requirements of AB 341, the City of Berkeley's Single Use Foodware Ordinance, and University of California's Sustainable Practices policies. In addition, Housing Project #2 has developed a trash management plan that includes the collection of five different streams: 1) waste, 2) paper recyclables, 3) cardboard, 4) container recyclables, and 5) compost.⁹⁴ Each residential floor will have a trash chute that discharges into a trash collection room, where sorting, baling, and compaction will take place prior to off-site disposal to landfills, recyclers, and composting facilities.

Therefore, the Keller Canyon Landfill would be able to accommodate projected solid waste from buildout of the LRDP Update until its closure date in 2030. If UC Berkeley has not yet met its zero waste goal at that date, then an alternate landfill, such as Altamont Landfill, would be able to accommodate solid waste from UC Berkeley. Altamont Landfill has a closure date of 2070 and is currently operating at only 35 percent of its permitted capacity. Therefore, impacts related to solid waste would be *less than significant*.

Significance without Mitigation: Less than significant.

UTIL-10	Implementation of the proposed project would comply with federal, State, and local statutes and regulations related to solid waste.
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LRDP Update

All development and redevelopment pursuant to the proposed LRDP Update would comply with the 2019 California Green Building Code Standards, which require that at least 65 percent of nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse. Development and redevelopment would also comply with the requirements of AB 341 that mandates recycling for commercial and multifamily residential land uses. Businesses and housing that includes five or more units must also arrange for organic waste recycling services if they generate two or more cubic yards per week of solid waste (including recycling and organic waste) in accordance with AB 1826. Organic waste generation would be reduced in line with the targets set by SB 1383. Food services facilities would comply with SB 1335, and reportable purchases would meet the requirements of the SABRC. Therefore, development projects pursuant to the proposed LRDP Update would comply with all applicable federal, State, and local solid waste regulations, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

As discussed above, proposed Housing Projects #1 and #2 would comply with the 2019 CALGreen Building Code Standards, AB 341, AB 1826, SB 1383, SB 1335, and the SABRC as applicable. Therefore, the Housing

⁹⁴ American Trash Management, 2020, Helen Diller Anchor House, UC Berkeley, Berkeley, CA, Trash Management Plan, dated March 13, 2020.

Projects 1 and 2 would comply with all applicable federal, State, and local solid waste regulations, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

UTIL-11	Implementation of the proposed project, in combination with past, present, and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to solid waste.
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The discussion below addresses two aspects of cumulative impacts: (1) would the effects of the cumulative development result in a cumulatively significant impact on the resources in question and, if that cumulative impact is likely to be significant, (2) would the contributions to that impact from the project, which is the subject of this Draft EIR, be cumulatively considerable?⁹⁵

LRDP Update

As discussed under impact discussion UTIL-9, the quantity of municipal solid waste generated by UC Berkeley would increase with buildout associated with the proposed LRDP Update. The 2018 landfill diversion rate was assumed to remain constant through 2036-37; however, with the implementation of the University of California’s Sustainability Practices Policies and UC Berkeley’s Zero Waste Plan, including the waste reduction programs described in Section 5.17.4.1, the amount of waste sent to the landfill would decrease significantly.

Nevertheless, there likely will be an increase in the demand for solid waste disposal capacity with the cumulative development projects identified in Chapter 5, Environmental Analysis, of this Draft EIR. Projects in the City of Berkeley would be serviced by the City. In 2019, 77 percent of landfilled waste from the City of Berkeley was sent to the Altamont Landfill, and 12 percent was sent to the Keller Canyon Landfill.⁹⁶

As noted in Section 5.17.4.2, the average daily throughput at the Keller Canyon Landfill is approximately 93 percent of its permitted daily capacity, and the landfill is anticipated to close in 2030. The Altamont Landfill in eastern Alameda County has a permitted peak capacity of 11,150 tons per day and receives an average of 3,888 tons per day.^{97,98,99} The landfill is currently operating at only 35 percent of its permitted capacity and is expected to close in 2070. Therefore, there is adequate capacity at the Altamont Landfill to accommodate

⁹⁵ CEQA Guidelines Section 15064(h)(1), “cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past, current, and probable future projects.

⁹⁶ California Department of Resources Recovery and Recycling, 2019, Jurisdiction Disposal and Alternative Daily Cover (ADC) Tons by Facility, <https://www2.calrecycle.ca.gov/LGCentral/DisposalReporting/Destination/DisposalByFacility>, accessed August 22, 2020.

⁹⁷ California Department of Resources Recovery and Recycling, 2019, SWIS Facility/Site Search, <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/?siteID=7>, accessed November 23, 2020.

⁹⁸ California Department of Resources Recovery and Recycling, 2019, Landfill Tonnage Reports, <https://www2.calrecycle.ca.gov/LandfillTipFees/>, accessed November 23, 2020.

⁹⁹ Based on five days per week operation (250 days per year).

the increase in solid waste due to the proposed LRDP Update in addition to cumulative projects within Alameda County. The projected increment of 15 tons per day due to implementation of the proposed LRDP Update would represent less than 1 percent of the peak permitted capacity at Altamont.

Therefore, with continued compliance with the applicable solid waste regulations, in combination with present and foreseeable future development, solid waste cumulative impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for proposed Housing Projects #1 and #2 is buildout under the proposed LRDP Update. Cumulative impacts from Housing Projects #1 and #2 are incorporated into the cumulative impact analysis of the proposed LRDP Update.

Significance without Mitigation: Less than significant.

5.17.5 ELECTRIC POWER, NATURAL GAS, AND TELECOMMUNICATIONS

This section addresses utility infrastructure related to electric power, natural gas, and telecommunications. Regulations, existing conditions, and impact discussion pertaining to energy and energy efficiency are included in Chapter 5.5, Energy, of this Draft EIR.

5.17.5.1 ENVIRONMENTAL SETTING

Regulatory Framework

Federal

Natural Gas Pipeline Safety Act of 1968

The Natural Gas Pipeline Safety Act of 1968 authorizes the Department of Transportation (DOT) to regulate pipeline transportation of flammable, toxic, or corrosive natural gas and other gases as well as the transportation and storage of liquefied natural gas. The Pipeline and Hazardous Materials Safety Administration within DOT develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.6 million miles of pipelines. DOT's and the Pipeline and Hazardous Materials Safety Administration's regulations governing natural gas transmission pipelines, facility operations, employee activities, and safety are in the Code of Federal Regulations, Parts 190 through 192, Part 195, and Part 199.

Pipeline Inspection, Enforcement, and Protection Act of 2020

The Pipeline Inspection, Enforcement, and Protection Act confirms the commitment to the Integrity Management Program and other programs enacted in the Pipeline Safety Improvement Act of 2006. The 2020 legislation includes provisions for:

- Updating integrity management programs to include an evaluation of risks that could lead to over-pressurization.
- Updating emergency response plans to include written procedures for communicating with first responders, public officials, and the public as soon as practicable after confirmed discovery of an incident that results in a fire, explosion, fatality, or unscheduled release of gas and shutdown of gas service to a significant number of customers.
- Assessing and upgrading district regulator stations to minimize the risk of over-pressurization.
- Updating regulations for idled pipelines.
- Requiring leak detection/repair programs to use advanced leak detection technologies/practices and to repair/replace of all leaking pipes. Leak detection/repair programs must be able to identify, locate, and categorize all leaks that are hazardous to human safety or the environment or can become hazardous to human safety.
- National Academy of Science to study and report to Congress on methods or standards for the installation of automatic shut-off valves or remote-controlled valves on existing transmission lines in high consequence areas.
- Requiring the submittal of Safety Related Condition Reports within five business days to the Department of Transportation, appropriate state authority, and appropriate tribe where the event occurred.

State

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned electric, natural gas, and telecommunications utilities and water, railroad, rail transit, and passenger transportation companies. CPUC policies regarding telecommunications are intended to ensure fair, affordable, and universal access. The Electric Safety and Reliability Branch of the CPUC enforces CPUC rules and regulations for power plants and utility companies, conducts audits, and investigates safety incidents or system problems regarding electric and communication systems. The CPUC also regulates natural gas services and energy efficiency programs, and investigates violations of the Public Utilities Code, CPUC regulations, and other relevant California statutes.

California Building Standards Code

The California Building Standards Code (24 CCR), provides minimum requirements for the construction and operation of buildings and building components, to safeguard public health, safety, and general welfare. Part 3 of the code is the California Electrical Code, which adopts the National Electrical Code of the National Fire

Protection Association with amendments specific for California. The purpose of the California Electrical Code is to establish minimum requirements for electrical infrastructure. It includes provisions pertaining to the construction, alteration, movement, enlargement, maintenance, removal, and demolition of all buildings or structures statewide. In addition, Part 6 of the California Building Standards Code is the California Energy Code, which provides energy conservation standards for new residential and nonresidential buildings, and requires the design of buildings and building components to conserve energy.

University of California

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley campus built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing campus buildings, infrastructure, grounds, and maintenance issues.

Directions for electrical and communications infrastructure are provided in Divisions 26 and 27, of the construction specifications, respectively. Natural gas piping is included in Division 22 for plumbing; Division 23 for heating, ventilation, and air conditioning; and Division 33 for utilities. The Campus Design Standards include directions for utility sizing, installation, controls, materials, efficiency, and relevant standards to follow.

UC Berkeley also complies with the UC Facilities Manual, which includes policies, procedures, and guidelines for planning, design, construction contracting, and facilities management.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to electric power, natural gas, and telecommunications as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their effectiveness and potential to result in an adverse physical impact later in this chapter under Section 5.17.5.3, Impact Discussion.

Local

City of Berkeley

Berkeley General Plan

The Berkeley General Plan includes several policies pertaining to utility infrastructure. These include Policy S-22, Fire Fighting Infrastructure, which includes actions for undergrounding of overhead utilities to reduce fire hazard risks in existing developed areas. In addition, undergrounding of utilities makes evacuation routes more reliable and safe, per Policy S-1, Response Planning, and improves physical character of the city as described in the Urban Design and Preservation Element of the Berkeley General Plan.

Berkeley Municipal Code

Title 19 of the Berkeley Municipal Code includes regulations for buildings and construction, including but not limited to, the Berkeley Building Code, Berkeley Electrical Code, Berkeley Plumbing Code, Berkeley Mechanical Code, and the Berkeley Energy Code. These codes adopt, with some city-specific amendments, the California model codes.

Effective January 1, 2020, the City passed the Natural Gas Prohibition and Reach Code for Electrification in order to reduce greenhouse gas emissions. Prohibition of natural gas infrastructure in new buildings is contained in the City's municipal code Chapter 12.80. Traditionally used natural gas appliances are required to be substituted for efficient, all-electric alternatives in all new buildings. In addition, the reach code amended the Berkeley Energy Code to exceed the energy efficiency standards in the California Energy Code. The reach code includes pathways for all-electric construction or mixed-fuel construction that exceeds efficiency requirements of the Energy Code; extends solar photovoltaic system requirements; and requires electric readiness for future electrification of systems that use natural gas.¹⁰⁰

City of Oakland

Title 15 of the Oakland Municipal Code includes provisions for buildings and construction. Chapter 15.04 includes Oakland amendments to California model building construction codes, including but not limited to the California Building Code, California Electrical Code, California Mechanical Code, California Plumbing Code, and California Energy Code.

Existing Conditions

LRDP Update

As described in Chapter 3, Project Description, UC Berkeley's utility infrastructure includes an interconnected system with electricity and natural gas provided by Pacific Gas and Electric Company (PG&E), as well as power to some sites provided by East Bay Community Energy (EBCE) and the University of California wholesale power program; on-site PV arrays; in-building chillers; a cogeneration plant on the Campus Park to produce steam and electricity that is powered by natural gas; and a steam plant on the Clark Kerr Campus. UC Berkeley's cogeneration plant provides approximately 90 percent of the electricity and 100 percent of the steam needs for the Campus Park and includes distribution infrastructure servicing approximately 120 UC Berkeley buildings.

UC Berkeley's current energy demand for the cogeneration plant, emergency generators, boilers, and on- and off-campus buildings is listed in Table 5.5-2, Existing Nontransportation Energy Demand, in Chapter 5.5, Energy, of this Draft EIR.

¹⁰⁰ City of Berkeley, 2019, City of Berkeley Natural Gas Prohibition & Reach Code for Electrification, https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/Berkeley%20Energy%20Reach%20Code%20for%20Electrification%20and%20Natural%20Gas%20Prohibition%209-27-19.pdf, accessed December 15, 2020.

Housing Project #1

The Housing Project #1 site includes several buildings that are currently served with electrical, natural gas, and telecommunications infrastructure. In addition, these utilities are provided throughout the surrounding development. Existing overhead power lines are located along Berkeley Way and Walnut Street, in addition to underground electrical lines along Berkeley Way and University Avenue. Existing underground telecommunications facilities are located along Shattuck Avenue.

Housing Project #2

The Housing Project #2 site includes limited existing utility infrastructure for lighting and serving a small restroom building with electricity and water. It is surrounded by existing development, which is currently served by existing electrical, natural gas, and telecommunications infrastructure. Existing overhead power lines are located along Haste Street, Bowditch Street, and Dwight Way surrounding the Housing Project #2 project site. Existing underground telecommunications facilities are located along Bowditch Street, just east of the Housing Project #2 site.

5.17.5.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact related to energy infrastructure if it would:

1. Require or result in the relocation or construction of new or expanded electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
2. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.17.5.3 IMPACT DISCUSSION

UTIL-12	Implementation of the proposed project would not require or result in the relocation or construction of new or expanded electric power, natural gas, or telecommunications facilities.
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LRDP Update

The proposed LRDP Update would add to UC Berkeley's building square footage and UC Berkeley population in the EIR Study Area, which could result in increased demands on electric power, natural gas, and telecommunications facilities. As shown in Table 5.5-4, LRDP Update Nontransportation Energy Demand, in Chapter 5.5, Energy, of this Draft EIR, the proposed LRDP Update would result in a net decrease in natural gas usage over the buildout horizon, as University of California and UC Berkeley energy policies require no new natural gas connections in new construction or large renovation projects for sites not included in the cogeneration plant system, which currently utilizes natural gas. Therefore, the proposed LRDP Update would not result in the relocation or construction of new or expanded natural gas facilities.

Table 5.5-4 also shows an estimated increase in electricity usage of between 1,828,388 megawatt-hours per year (MWh/Yr) and 2,097,388 MWh/Yr from the 2018 baseline year to the proposed LRDP Update buildout year. Specific increases would be dependent on specific upgrades chosen for the cogeneration plant in the Campus Park. Future potential development under the proposed LRDP Update would primarily occur on infill sites where there are already existing demands and connections for electricity and telecommunications services. The proposed LRDP Update includes upgrades to the existing electric network on the Campus Park, the Hill Campus West, and the Hill Campus East to accommodate increased load from growth, electrification, comfort cooling, and warming climate. Upgrades would increase UC Berkeley's electrical capacity of its underground feeds from the Hill Campus East down to the Campus Park. In addition, UC Berkeley is considering opportunities to supplement the campus's electrical resilience to ensure reliable energy during public safety power shutoffs by PG&E or other service interruptions, and to increase renewable energy usage. As listed in Chapter 3, Project Description, new energy systems implemented under the proposed LRDP Update could include a solar array; geothermal system; hydrogen fuel cell; biogas fuel cells; alternative source heat pumps; CO₂ heat pumps phase change thermal storage; flow batteries; and/or a mechanical energy storage. These systems would increase UC Berkeley's energy independence as well as promote renewable energy usage and climate resiliency. Finally, UC Berkeley plans on an energy use intensity reduction of 2 percent per year through energy-efficient upgrades and retrofits, and to have future projects exceed adopted California Building Code energy-efficiency requirements by at least 20 percent. Future developments and large renovations under the proposed LRDP Update would have a goal of obtaining LEED Silver certification or higher where possible.

The proposed LRDP Update would result in an increase in electricity consumption, but potential future development under the proposed LRDP Update would be primarily infill development and would occur over a multiyear period in an area that is already served by existing electrical infrastructure. In addition, the LRDP Update would implement the described energy efficiency measures discussed previously along with the incorporation of on-site renewable energy systems. Accordingly, the proposed LRDP Update is not anticipated to result in the relocation or construction of new or expanded electric power facilities. Because of the urbanized nature of the EIR Study Area, it is anticipated that any new development would be able to connect to existing infrastructure.

Similarly, the EIR Study Area is already connected to telecommunications facilities, and it is anticipated that new development would be able to connect to existing infrastructure. Local telecommunications infrastructure is often located in city rights-of-way and/or underground, and environmental impacts associated with future improvements would be anticipated to be minimal because these areas are already developed. UC Berkeley is already served by telecommunications infrastructure, and the proposed LRDP Update is not anticipated to result in the relocation or construction of new or expanded telecommunications facilities off-site.

As part of the proposed project, UC Berkeley and future development projects would implement the utilities and service system (USS) CBPs listed here:

CBP USS-8: To the extent feasible, for all projects in the City Environs Properties, UC Berkeley will include the undergrounding of surface utilities along project street frontages, in support of Berkeley General Plan Policy S-22.

Implementation of CBP USS-8 would reduce utility-related hazards from development projects by reducing the fire risk and physical hazards that are associated with aboveground utilities, particularly with overhead electrical lines, where it is possible to incorporate on-site into individual development projects. This would be relevant for where specific development projects are connected to the existing surrounding utility infrastructure, and would not require the construction or expansion of new or expanded electrical, natural gas, or telecommunications infrastructure as a result of individual development projects under the LRDP Update. The ongoing implementation of CBP USS-2 through CBP USS-8, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional impacts associated with energy. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects.

Because the proposed LRDP Update would not be anticipated to result in the construction of new or expanded electric power, natural gas, or telecommunications infrastructure, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

The proposed Housing Project #1 site is currently served by existing electrical, natural gas, and telecommunications infrastructure to support the existing residential and commercial uses on-site. Housing Project #1 would connect to the surrounding existing utilities through connections to existing off-site electrical and telecommunications lines and new on-site infrastructure. Electricity would be provided through EBCE with infrastructure maintained by PG&E. The building would not use natural gas for energy, but would be all electric. Therefore, it would not require or result in the relocation or construction of new or expanded natural gas facilities.

As described in Chapter 3, Project Description, of this Draft EIR, approximately 30 percent of the electricity required for cooling the building for Housing Project #1 would be generated through on-site solar PV panels. In addition, the building would be LEED-certified Gold and target a 20 percent energy use reduction from the 2019 California Building and Energy Efficiency Standards per UC Berkeley policy to increase energy efficiency. Because there is already existing electricity demand on-site and the project would include measures for energy efficiency as well as supplemental on-site electricity generation with a solar PV system, Housing Project #1 would not require or result in the relocation or construction of new or expanded electric power facilities.

Finally, telecommunications and broadband services would be provided by connection to UC Berkeley's campuswide broadband system and existing utility providers in the area, such as AT&T, Comcast, or Sonic, and therefore would not require the relocation or construction of new or expanded telecommunications facilities. Impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

There is currently little utility infrastructure on the proposed Housing Project #2 site since the site is primarily open space. However, it is in an urbanized area surrounded by existing development, and Housing Project #2 would connect to surrounding electrical and telecommunications infrastructure. Electricity would be provided through EBCE with infrastructure maintained by PG&E. Housing Project #2 would be all electric and would not use fossil fuel except to power a diesel-fueled emergency generator. Therefore, it would not require or result in the relocation or construction of new or expanded natural gas facilities.

As described in Chapter 3, Project Description, Housing Project #2 would also include 12,000 square feet of solar PV panels on the roof of the proposed student housing building and additional PV panels on the roof of the proposed affordable and supportive housing building. These would help to offset energy demands from service providers. In addition, the student housing building would pursue LEED Gold certification and target a 20 percent energy use reduction from the 2019 California Building and Energy Efficiency Standards per UC Berkeley policy. Because Housing Project #2 would connect to existing surrounding utilities, include measures for energy efficiency, and include supplemental on-site electricity generation, it is anticipated that Housing Project #1 would not require or result in the relocation or construction of new or expanded electric power facilities.

Finally, telecommunications and broadband services would be provided by connection to UC Berkeley's campuswide broadband system and existing utility providers in the area, such as AT&T, Comcast, or Sonic, and therefore would not require the relocation or construction of new or expanded telecommunications facilities. Impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

UTIL-13	Implementation of the proposed project, in combination with past, present and reasonably foreseeable projects, would result in less-than-significant cumulative impacts with respect to electrical power, natural gas, or telecommunications facilities.
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LRDP Update

Chapter 5, Environmental Analysis, shows an increase in the population of the San Francisco Bay Area, as projected by the Association of Bay Area Governments, in Table 5-1, City and Regional Population and Housing Projections. Increases in population can be correlated to increases in energy use that could require the construction of new or expanded electrical power, natural gas, or telecommunications facilities.

Under the proposed LRDP Update, UC Berkeley plans for increased efficiency of its energy systems, upgrades to its utility infrastructure, and the addition of renewable energy technologies to accommodate increased growth. These would help reduce the demand UC Berkeley places on local electric, natural gas, and telecommunications infrastructure. In addition, UC Berkeley is moving away from natural gas reliance, as is the City of Berkeley per its municipal code Chapter 12.80. Therefore, development under the proposed

LRDP Update, combined with the surrounding area, would not result in significant cumulative impacts regarding natural gas facilities. In turn, this puts additional reliance on electric power. However, in addition to these facilities being provided for the overall population, increased energy efficiency contributes to reducing the burden on utility infrastructure.

The California Energy Commission (CEC) projects electricity consumption with baseline and managed forecasts and estimates for high demand, mid demand, and low demand. Managed forecasts adjust baseline forecasts for energy savings results from efforts that are reasonably expected to occur but lack funding commitments or implementation plans. High demand forecasts are based on assumptions of relatively high economic and demographic growth, relatively low electricity and natural gas rates, and relatively low committed efficiency program, self-generation, and climate change impacts. Low demand forecasts are based on assumptions of lower economic and demographic growth, higher assumed rates, and higher committed efficiency program and self-generation impacts. Mid demand forecasts use assumptions between the two.¹⁰¹ The CEC's baseline high demand forecast projects that electricity consumption will increase at an average annual growth between 2019 and 2030 of 1.18 percent for the Greater Bay Area.¹⁰² Because increased densification and population throughout the San Francisco Bay area are anticipated, CEC would include electric power and telecommunications facilities in its planning.

Given the already urbanized character of the EIR Study Area, new conveyance facilities are not anticipated to significantly alter land use patterns to the extent that construction of new electrical, natural gas, or telecommunications facilities would be warranted. Therefore, cumulative impacts regarding these facilities would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Projects #1 and #2

The cumulative setting for proposed Housing Projects #1 and #2 is buildout under the proposed LRDP Update. Cumulative impacts from Housing Projects #1 and #2 are incorporated into the cumulative impact analysis of the proposed LRDP Update.

Significance without Mitigation: Less than significant.

¹⁰¹ California Energy Commission, 2020, *Final 2019 Integrated Energy Policy Report*, pages 202 through 212.

¹⁰² California Energy Commission, 2020, CED 2019 Baseline Forecast – LSE and BA Tables High Demand Case – CORRECTED Feb 2020 TN-232310, <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2019-integrated-energy-policy-report/2019-iepr>, accessed December 19, 2020.

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5.18 WILDFIRE

This chapter describes the potential wildfire impacts associated with the approval and implementation of the proposed LRDP Update and the construction and operation of the proposed Housing Projects #1 and #2. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential wildfire impacts, and identifies UC Berkeley's continuing best practices (CBPs) and feasible mitigation measures that could mitigate any potentially significant impacts.

5.18.1 ENVIRONMENTAL SETTING

5.18.1.1 REGULATORY FRAMEWORK

This section summarizes key regulations that identify wildfire hazard areas and reduce wildfire risks to new and existing structures.

State

Fire Hazard Severity Zones and Responsibility Areas

The California Department of Forestry and Fire Protection (CAL FIRE) publishes maps recommending fire hazard severity zones (FHSZ) for every California county. The maps identify lands in California as falling within one of the following management areas: local responsibility area (LRA), state responsibility area (SRA), or federal responsibility area (FRA). Within each of these areas, a single agency has direct responsibility: in LRAs, local fire departments or fire protection districts are responsible; in SRAs, CAL FIRE is responsible; in FRAs, federal agencies, such as the United States Forest Service, National Park Service, Bureau of Land Management, United States Department of Defense, United States Fish and Wildlife Service, or Department of the Interior, are responsible.¹

Within the LRAs, CAL FIRE designates lands as being within a Very High FHSZ or not. The LRA maps also show the Very High FHSZ and non-Very High FHSZ areas within the SRA and FRA, but do not differentiate lands within the SRA and FRA from each other (that is, SRA and FRA areas are mapped together).

Within the SRA, CAL FIRE designates Moderate FHSZs, High FHSZs, and Very High FHSZs. The SRA maps also indicate which lands are within the LRA and which are within the FRA, but do not show the hazard zones within the LRA and FRA.

¹ Association of Bay Area Governments and Metropolitan Transportation Commission, 2018, White Paper: Bay Area Wildland Urban Interface Review of Risks, Plans, and Strategies, page 7; and Contra Costa County, 2018, Contra Costa County Hazard Mitigation Plan, page 13-1.

California Building Code

The California Building Code (CBC), contained in Part 2 of Title 24 of the California Code of Regulations, identifies building design standards, including those for fire safety. Typical fire safety requirements of the CBC include the installation of fire sprinklers in all new high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas.

Chapter 7A of the CBC, Materials and Methods for Exterior Wildfire Exposure, prescribes building materials and construction methods for new buildings in a FHSZ. Chapter 7A contains requirements for roofing; attic ventilation; exterior walls; exterior windows and glazing; exterior doors; decking; protection of underfloor, appendages, and floor projections; and ancillary structures.

California Fire Code

The California Fire Code (CFC) incorporates, by adoption, the International Fire Code of the International Code Council, with California amendments. The CFC includes provisions and standards for emergency planning and preparedness, fire service features, fire protection systems, hazardous materials, fire flow requirements, and fire hydrant locations and distribution. Typical fire safety requirements include installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas.

Chapter 49 of the CFC, Requirements for Wildland-Urban Interface (WUI) Fire Areas, prescribes construction materials and methods in FHSZs. These requirements generally parallel CBC Chapter 7A.

California Public Resources Code

California Public Resources Code (PRC) Sections 4291 et seq. require that brush, flammable vegetation, or combustible growth be removed within 100 feet of buildings on or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land covered in flammable materials.

California PRC Section 4290 requires the State Board of Forestry and Fire Protection to adopt regulations implementing minimum fire safety standards for defensible space that would be applicable to lands within the SRA and lands within Very High FHSZs.

California PRC Section 4442 regulates the use of internal combustion engines that use hydrocarbon fuels on forest-covered land, brush-covered land, and grass-covered land. Internal combustion engines, like those used in construction, must be equipped with a spark arrester, which is a device used for removing and retaining carbon and other flammable particles from the exhaust flow for engines that use hydrocarbon fuels. These engines must be maintained in effective working order or be constructed, equipped, and maintained for the prevention of fire.

State Responsibility Areas Fire Safe Regulations

SRA Fire Safe Regulations outline basic wildland fire protection standards and can decrease the risk of wildfire events. SRA Fire Safe Regulations do not supersede local regulations that equal or exceed minimum State regulations. The State statute for wildfire protection is PRC Section 4290. Requirements in the PRC include information on:

- Road standards for fire equipment access
- Standards for signs identifying streets, roads, and buildings
- Minimum private water supply reserves for emergency fire use
- Fuel breaks and greenbelts
- Basic emergency access

California Office of Emergency Services

The California Office of Emergency Services (Cal OES) was established on January 1, 2009, and created by Assembly Bill (AB) 38, which merged the duties, powers, purposes, and responsibilities of the former Cal OES with those of the Governor's Office of Homeland Security. Cal OES is responsible for the coordination of overall State agency response to major disasters in support of local government. Cal OES is responsible for ensuring the State's readiness to respond to and recover from all hazards—natural, man-made, emergencies, and disasters—and for assisting local governments in their emergency preparedness, response, recovery, and hazard mitigation efforts. In 2018, Cal OES completed a State Hazard Mitigation Plan, which designated FHSZs and WUI areas.²

2019 Strategic Fire Plan for California

CAL FIRE produced the 2019 Strategic Fire Plan for California, which contains goals, objectives, and policies to prepare for and mitigate the effects of fire on California's natural and built environments.³ The 2019 Strategic Fire Plan for California focuses on fire prevention and suppression activities to protect lives, property, and ecosystems. In addition, CAL FIRE provides regulatory oversight to enforce State fire laws and delivers a land use planning and defensible space inspection program to local governments across the state.⁴

California Public Utilities Commission

In 2007, wildfires in southern California were ignited by overhead utility power lines and aerial communication facilities near power lines. In response, the California Public Utilities Commission (CPUC) began considering and adopting regulations to protect the public from fire hazards posed by overhead

² California Office of Emergency Management. 2018, California State Hazard Mitigation Plan, https://www.caloes.ca.gov/HazardMitigationSite/Documents/002-2018%20SHMP_FINAL_ENTIRE%20PLAN.pdf, accessed July 10, 2020.

³ California State Board of Forestry and Fire Protection. 2019, 2019 Strategic Fire Plan for California, <https://www.fire.ca.gov/media/5504/strategicplan2019-final.pdf>, accessed July 10, 2020.

⁴ California State Board of Forestry and Fire Protection. 2019, 2019 Strategic Fire Plan for California, <https://www.fire.ca.gov/media/5504/strategicplan2019-final.pdf>, accessed July 10, 2020.

power lines and nearby aerial communication facilities. The CPUC published a fire threat map—under Rulemaking 15-05-006, following procedures in Decision 17-01-009, revised by Decision 17-06-024—that adopted a work plan for the development of a utility high fire-threat district where enhanced fire safety regulations in Decision 17-12-024 apply.⁵ The fire regulations require electrical utilities to:⁶

- Prioritize the correction of safety hazards.
- Correct nonimmediate fire risks in “Tier 2” (elevated fire threat) areas in the CPUC high fire-threat district within 12 months, and in “Tier 3” (extreme fire threat) areas within 6 months.
- Maintain increased clearances between vegetation and power lines in the high fire-threat district.
- Maintain stricter wire-to-wire clearances for new and reconstructed facilities in Tier 3 areas.
- Conduct annual inspections of overhead distribution facilities in rural areas of Tier 2 and Tier 3 areas.
- Prepare a fire prevention plan annually if overhead facilities exist in the high fire-threat district.

University of California

Emergency Preparedness Program

To facilitate mitigation, preparedness, response, and recovery in the event of any emergency, the University of California (UC) system has adopted the National Standard on Disaster/Emergency Management and Business Continuity Programs. Furthermore, the University of California is required under State law to use the Standardized Emergency Management System (SEMS), an emergency management organizational structure used by all emergency response agencies statewide to coordinate incidents between agencies or jurisdictions. The SEMS also incorporates all of the requirements of the National Incident Management System. With this, all UC facilities are required to incorporate the major elements of SEMS into their emergency plans and operations, which provides some consistency between multiple public agencies to facilitate smooth coordination. Among the requirements that UC facilities must incorporate from the SEMS are: adopting the Incident Command System, which is a standardized emergency response organization structure; establishing local interagency agreements as necessary with law enforcement, fire, and medical services; and providing training to responsible individuals involved in emergency response and recovery.⁷

Emergency Operations Plan

Each UC campus has a specific emergency operations plan (EOP). These plans include in-depth information for how each UC campus responds to any emergency situation, including fire hazards. The UC Office of Emergency Management works with campus units and leadership to respond to and recover from emergency situations.

⁵ California Public Utilities Commission, <https://ia.cpuc.ca.gov/firemap/>, accessed July 10, 2020.

⁶ California Public Utilities Commission, press release: CPUC Adopts New Fire-Safety Regulations, <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M201/K352/201352402.PDF>, accessed July 10, 2020.

⁷ University of California Office of the President, University of California Facilities Manual, Volume 6: Plant Operations & Maintenance, Chapter 4, Plant Administration, Section 4.6 Emergency Response, <https://www.ucop.edu/construction-services/facilities-manual/volume-6/vol-6-chapter-4.html#4-6>, accessed July 17, 2020.

Wildland Vegetative Fuel Management Plan

In February 2021, UC Berkeley approved a Wildland Vegetative Fuel Management Plan for the Hill Campus East and Hill Campus West zones. This plan provides guidance on implementing projects that reduce wildfire risk and minimize potential for harmful effects of wildfire on people, property, and natural resources. The plan proposes treating vegetation that could become fire fuel according to four treatment types—evacuation support treatments, temporary refuge areas, fuel break treatments, and fire hazard reduction treatments.⁸

UC Berkeley Campus Design Standards

UC Berkeley created the Campus Design Standards to guide design and construction professionals to complete lasting, high-quality additions to the UC Berkeley built environment. The Campus Design Standards, along with applicable codes, ensure that new construction and renovation projects at UC Berkeley integrate industry best practices and experience with existing UC Berkeley buildings, infrastructure, grounds, and maintenance issues. Relevant sections of the Design Standards are:

- Section 21 of the Campus Design Standards provides directions for the design, installation, and maintenance of fire suppression systems in order to ensure systems are built to code and UC Berkeley standards for enhancing life safety and reducing fire risk.
- Similarly, Section 28 of the Campus Design Standards includes directions for the design, installation, and maintenance of fire alarm systems for all UC Berkeley buildings.

UC Berkeley Continuing Best Practices

UC Berkeley applies CBPs relevant to wildfire as part of the project approval process. As part of the proposed LRDP Update, some existing CBPs would be updated to carry forward through implementation of the proposed LRDP Update. A comprehensive list of CBP updates is provided in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, of this Draft EIR. Applicable CBPs are identified and assessed for their potential to result in an adverse physical impact later in this chapter under Section 5.18.3, Impact Discussion.

Local

As discussed in Chapter 3, Project Description, UC Berkeley is constitutionally exempt from local governments' regulations, such as city and county general plans, land use policies, and zoning regulations, whenever using property under its control in furtherance of its educational purposes. As such, potential future development that implements the proposed LRDP Update, including Housing Projects #1 and #2, is generally exempt from local policies and regulations. However, UC Berkeley may consider, for coordination purposes, aspects of local policies and regulations for the communities surrounding the UC Berkeley campus when it is appropriate and feasible, although it is not bound by those policies and regulations. Therefore, this section outlines the policies and regulations of the cities of Berkeley and Oakland, and

⁸ University of California, Berkeley, 2020, *Draft Wildland Vegetative Fuel Management Plan*.

Alameda and Contra Costa counties related to wildfire that UC Berkeley may consider when evaluating future development projects that implement the LRDP Update, including Housing Projects #1 and #2.

Alameda County Community Wildfire Protection Plan

The Alameda County Community Wildfire Protection Plan (CWPP) was most recently updated in 2015 by the Diablo Fire Safe Council in conjunction with the Alameda County Fire Chiefs Association, Hills Emergency Forum, Oakland Wildfire Prevention Assessment District, and stakeholder committee members. It provides an analysis of the WUI areas of Alameda County. The Alameda County CWPP describes the local fire environment, identifies values at risk from wildfires, presents high fire hazard areas, describes measures the community can take to reduce ignitability of structures and prioritize fuel management projects, identifies fuel reduction best management practices, and identifies federal, State, and local resources. The cities of Berkeley and Oakland are described as the most heavily urbanized areas within the county.

The Alameda County CWPP lists recommendations for reducing wildfire risk, including increasing awareness of hazard conditions; restricting certain equipment or work during high fire danger weather; maintaining and enforcing defensible space around buildings and reducing fuel sources adjacent to buildings; planting fire-resistant plants and using fire-resistant building materials; managing vegetation responsibly; and creating collaborative partnerships between local communities, natural resource, and fire response groups.

Contra Costa County Community Wildfire Protection Plan

The Contra Costa County CWPP was also prepared by the Diablo Fire Safe Council and describes wildfire hazards and mitigation for Contra Costa County. The Contra Costa County CWPP is intended to be used to reduce the risk of conflagration through increased collaboration between relevant communities and agencies, reduction of hazardous fuels within the WUI, maintenance of defensible space, reduction of structural ignitability hazards, and planning of evacuation protocols and drills. Factors outlined in the plan that should take into consideration wildfire risks and mitigation include development and settlement patterns, vegetation and landscape management, architecture, and human behavior. The plan notes that almost all ignitions of catastrophic fires in the county are human related. Fuel management and reduction, and treatment of structure ignitability, are described as prioritized mitigations against wildfire potential.

Alameda County Emergency Operations Plan

The Alameda County Emergency Operations Plan (EOP), dated December 2012 and put together by the Alameda County Sheriff's Office of Homeland Security and Emergency Services, provides an overview of the jurisdiction's approach to emergency operations for the county, including those pertaining to wildfires. The Alameda County EOP gives a description and history of the wildfire threat to the county, among other hazards, and provides an overview of emergency response policies, response and recovery organization, and roles and responsibilities assigned to governmental agencies and community partners. The Alameda County EOP is intended to be used for all types of emergencies in order to facilitate response and recovery activities.

Contra Costa County Emergency Operations Plan

The 2015 Contra Costa County EOP, like the Alameda County EOP, is intended to apply to any emergency situation, including wildfires, to guide responsible agencies in responding effectively and efficiently along the chain of command. The Contra Costa County EOP provides instruction for those responsible for carrying out the plan, including response organization, communications resources and protocols, and recovery steps.

City of Berkeley General Plan

Fire hazards are discussed in the disaster preparedness and safety element of the 2002 Berkeley General Plan. One of the Disaster Preparedness and Safety Element's main objectives is to reduce the potential for loss of life, injury, and economic damage resulting from urban and wildland fire. Policy S-1, Response Planning, is meant to ensure that Berkeley's emergency response plans incorporate the latest information and establish clear coordination of roles with other local jurisdictions and agencies, including UC Berkeley.

City of Oakland General Plan

The safety element of the Oakland General Plan addresses fire hazards, acknowledging the Oakland hills as a highly fire-prone area and fire-dependent ecosystem, making wildfires one of the most severe fire hazards for Oakland. Policies include enhancing Oakland's capacity for emergency response, fire prevention, and fire-fighting; implementing programs that reduce the risk of structural fires; and prioritizing the reduction of wildfire hazard, with an emphasis on prevention. Oakland and surrounding jurisdictions rely on collaboration to address wildfires, which pose a threat to the region as a whole, and they have mutual-response agreements for fire protection with Alameda County, Contra Costa County, the East Bay Regional Park District, and the cities of Alameda, Berkeley, Emeryville, Piedmont, and San Leandro.

Berkeley Local Hazard Mitigation Plan

The 2019 Berkeley Local Hazard Mitigation Plan (LHMP) evaluates risks that different hazards pose to Berkeley and associated mitigation measures. The Berkeley LHMP documents current understanding of hazards and the city's vulnerabilities to them; presents a mitigation strategy for a time period of five years; and fulfills requirements of the federal Disaster Mitigation Act of 2000, which requires all communities to prepare mitigation plans. The Berkeley LHMP highlights that the city is vulnerable to wildfires, particularly in the WUI, and lists this as one of the city's hazards of greatest concern. Notable mitigation strategies discussed in the Berkeley LHMP include prevention through development regulations; natural resource protection through vegetation management; improvement of access and egress routes; and infrastructure maintenance and improvements to support first responders' efforts in reducing fire spread.

Oakland Local Hazard Mitigation Plan

The Oakland 2016-2021 LHMP, like the Berkeley LHMP, evaluates specific risks and mitigation measures for the City of Oakland, including those applicable to wildfire hazards. Both cities share many of the same risks due to their proximity. The Oakland LHMP includes reauthorizing the Wildfire Prevention Assessment District, developing the Defensible Space Vegetation Program for management of wildfire hazards, and

adopting a fire-safe combining zone for future construction in the Oakland Planning Code as current fire prevention strategies.

Berkeley Municipal Code

Chapter 19.28 of the Berkeley Municipal Code is the Berkeley Building Code, which adopts with amendments the CBC. Section 19.28.030 adopts with modifications CBC Chapter 7A, Materials and Construction Methods for Exterior Wildlife Exposure. This section defines three fire zones for the city of Berkeley, in order of fire risk, with 3 being most at risk. Fire Zone 1 encompasses the entire city except for those under Fire Zones 2 and 3. Fire Zone 2 encompasses areas zoned as Combined Hillside Districts and areas designated as Very High FHSZs by CAL FIRE (including the eastern section of the UC Berkeley Campus Park to the east city line, all of the Clark Kerr Campus to the east city line, and all of block number 7680 and portions of block number 1702 in the Alameda County Assessor's parcel number system). Fire Zone 3 encompasses areas zoned as Environmental Safety – Residential Districts, which includes the Panoramic Hill neighborhood in southeast Berkeley.

Chapter 19.48 of the Berkeley Municipal Code is the Berkeley Fire Code, which adopts the CFC with amendments. Section 19.48.020 defines WUI fire area as “a geographical area identified by the State as a Fire Hazard Severity Zone in accordance with PRC Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.” This section identifies the city's WUI as Berkeley Fire Zones 2 and 3.

Oakland Municipal Code

Chapter 15.12 of the Oakland Municipal Code is the Oakland Fire Code, which adopts the CFC with amendments. Section 15.12.010 amends the CFC to delineate WUI fire areas in the eastern part of the city, which includes the East Bay hills.⁹

5.18.1.2 EXISTING CONDITIONS

LRDP Update

Wildfire Background

Wildfires burn in many types of vegetation, including forest, woodland, scrub, and grassland. Many species of native California plants are adapted to fire, and fire can play an important role in the health of these ecosystems.¹⁰ The San Francisco Bay area's Mediterranean-like climate, lack of summer rains, wind-conducive topography with steep canyons and swales, and fire-adapted vegetation predisposes the area to

⁹ City of Oakland, 2020, Oakland Municipal Code Title 15 Buildings and Construction, Chapter 15.12 Oakland Fire Code, Section 15.12.010 2016 California Fire Code is adopted and amended, https://library.municode.com/ca/oakland/codes/code_of_ordinances?nodeId=TIT15BUCO_CH15.12OAFICO_15.12.0102016CAFICOISADAM, accessed November 23, 2020.

¹⁰ California Department of Forestry and Fire Prevention, 1999, Learning to Live with Fire, https://www.fire.ca.gov/media/8657/live_w_fire.pdf, accessed July 17, 2020.

periodic burns. Wildfires have grown in frequency and intensity throughout the West during the past several years, particularly in California, where prolonged drought and hot, dry temperatures have been common.

Wildfire Causes

Though wildfires can occur from natural origins (e.g., lightning) and can play an important role in certain ecosystems, a 2017 study that evaluated 1.5 million wildfires in the United States between 1992 and 2012 found that humans were responsible for igniting 84 percent of wildfires and accounted for 44 percent of acreage burned.¹¹ Human-caused wildfires can be from debris burning, arson, equipment use, and power-line failures.

An analysis of US Forest Service wildfire data from 1986 to 1996 determined that 95 percent of human-caused wildfires and 90 percent of all wildfires occurred within half a mile of a road; and that about 61 percent of all wildfires and 55 percent of human-caused wildfires occurred within about 650 feet of a road. The study concluded that the increase in human-caused ignition greatly outweighed the benefits of increased access for firefighters.¹²

The number of large wildfires in California (i.e., greater than 1,000 acres) has increased from approximately 25 to 55 per year since the 1960s.¹³ At the same time, the average mean temperature and length of fire season are increasing. The warmer temperatures, reduced snowpack, and earlier spring snowmelt result in longer and more intense dry seasons that make forests more susceptible to wildfires.¹⁴ The encroachment of urban development into wildland areas has been another contributing factor that increases the risk of human-caused wildfires.

Secondary Effects

Secondary effects of wildfire include additional hazards such as poor air quality, landslides, and power outages.

- **Air Pollution.** Smoke is made up of a complex mixture of gases and fine particles produced when wood and other organic materials burn. The biggest health threat from smoke is from fine particles that can penetrate the lungs and cause a range of health problems, from burning eyes and a runny nose to aggravated chronic heart and lung diseases. Exposure to particulate pollution is even linked to

¹¹ Balch, Jennifer; Bradley, Bethany; Abatzoglou, John, et. al. 2017, Human-Started Wildfires Expand the Fire Niche Across the United States. *Proceedings of the National Academy of Sciences (PNAS)*: Volume 114 No. 11, <https://www.pnas.org/content/pnas/114/11/2946.full.pdf>, accessed July 17, 2020.

¹² Pacific Biodiversity Institute, 2007, Roads and Wildfires, http://www.pacificbio.org/publications/wildfire_studies/Roads_And_Wildfires_2007.pdf, accessed July 17, 2020.

¹³ State Board of Forestry and Fire Protection and California Department of Forestry and Fire Prevention, 2018, *2018 Strategic Fire Plan for California*.

¹⁴ California Department of Forestry and Fire Protection, 2020, 2020 Fire Season, <https://www.fire.ca.gov/incidents/2020/>, accessed July 23, 2020.

premature death. Some populations are more sensitive than others to smoke, including people with heart or lung diseases, the elderly, children, people with diabetes, and pregnant women.¹⁵

- **Landslides and Debris Flows.** When supporting vegetation is burned away, hillsides become prone to destabilization and erosion, increasing the risk of landslides. Postfire landslide hazards include fast-moving, highly destructive debris flows in the period immediately following wildfires in response to high-intensity rainfall, and flows that are generated over longer periods that are accompanied by root decay and loss of soil strength. Fires increase the potential for debris flows by increasing the imperviousness of soil so that it repels water and by destroying vegetation that would slow and absorb rainfall, and whose roots would help stabilize soil.¹⁶ The burning of vegetation and soil on slopes more than doubles the rate that water will run off into watercourses.¹⁷ Postfire debris flows are particularly hazardous because they can happen with little warning, sweep away objects in their paths with great force, strip vegetation, block drainages, damage structures, and endanger human life. Debris flows differ from mudflows in that debris flows are composed of larger particles. Postfire debris flows are most common in the two years after a fire; they are usually triggered by heavy rainfall. It takes much less rainfall to trigger debris flows from burned areas than from unburned areas. Areas with steep slopes are typically within debris flow areas.
- **Power Outages.** Power outages relating to wildfire can occur either from deliberate shutoff of power in order to reduce the risk of wildfires that might occur from power lines damaged during dry, hot winds, or as a result of wildfire damage to utilities. This has obvious consequences, such as the inability to operate vulnerable and critical systems for day-to-day life, such as fuel, water, communication, heating and cooling, and other systems that require electricity.

Wildland Urban Interface

According to Cal OES, a WUI is defined as any area where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.¹⁸ Developments in the WUI exacerbate fire occurrence and fire spread in several ways, including:

- Increased numbers of human-caused wildfires.
- Wildfires become harder to fight.
- Firefighting resources are diverted from containing the wildfire to protecting lives and homes.
- Letting natural fires burn becomes impossible, leading to buildup of fuel and increasing wildfire hazard further.¹⁹

¹⁵ AirNow, 2017, How Smoke from Fires Can Affect Your Health, <https://cfpub.epa.gov/airnow/index.cfm?action=smoke.index>, accessed July 17, 2020.

¹⁶ United States Geological Survey, 2018, New post-wildfire resource guide now available to help communities cope with flood and debris flow danger, https://www.usgs.gov/center-news/post-wildfire-playbook?qt-news_science_products=1#qt-news_science_products, accessed July 17, 2020.

¹⁷ California Geological Survey, 2018, Post-Fire Debris Flow Facts, <https://www.conservation.ca.gov/index/Pages/Fact-sheets/Post-Fire-Debris-Flow-Facts.aspx>, accessed on July 17, 2020.

¹⁸ California Governor's Office of Emergency Services, 2018, *2018 California State Hazard Mitigation Plan*, Section 8.1, page 515.

¹⁹ Radeloff, Volker; Helmers, David; Kramer, H., et al., 2018, Rapid Growth of the US Wildland-Urban Interface Raises Wildfire Risk. *Proceedings of the National Academy of Sciences (PNAS)*: Volume 115 No. 13, <https://www.pnas.org/content/pnas/115/13/3314.full.pdf>, accessed July 23, 2020.

Wildfire History

Major fires have occurred in the Berkeley area dating back to at least 1905, when a fire broke out in Strawberry Canyon in the Hill Campus East zone of the EIR Study Area. In 1923, a fire began in Wildcat Canyon northeast of Berkeley and spread across northern and central Berkeley, destroying 568 structures. The Fish Canyon Fire in 1970 destroyed 39 structures, and the Wildcat Canyon Fire in 1980 destroyed five structures. One of the more notable fires in the area in recent decades is the 1991 Tunnel Fire, which destroyed 62 homes in Berkeley and more than 3,000 in Oakland and killed 25 people. The Federal Emergency Management Agency estimated the damage from this fire at 1.5 billion dollars in 1991 (about 2.8 billion 2018 dollars).²⁰

Wildfire Hazards

The EIR Study Area, particularly the Hill Campus East, is vulnerable to wind-driven fires starting along the slopes of East Bay Hills, compounded by the mountainous topography, limited water supply, limited access and egress routes through the hills, and the location directly over the Hayward Fault, which increases the risks of fires induced by earthquake damage. The city's flatlands, densely packed with many old wooden buildings, are exposed to a fire spreading west from the hills.²¹

The FHSZs relative to the EIR Study Area are shown in Figure 5.18-1, Fire Hazard Severity Zones. The EIR Study Area is not in an FRA but does contain land in an SRA and an LRA, as shown in Figure 5.18-1. The Hill Campus West and the Clark Kerr Campus are fully within the Very High FHSZ for the Alameda County LRA. The majority of the Hill Campus East located in Alameda County is also fully within a Very High FHSZ for the Alameda County LRA, and the small area in Contra Costa County is in a Very High FHSZ for the SRA. The eastern edge of the Campus Park and some UC Berkeley properties within the City Environs Properties along the eastern edge of Berkeley are in the Very High FHSZ for the Alameda County LRA; however, most of these subareas are not in a Very High FHSZ.^{22, 23}

The CPUC high fire-threat districts relative to the EIR Study Area are shown in Figure 5.18-2, California Public Utilities Commission High Fire-Threat Districts. Small portions of the Hill Campus West and the Clark Kerr Campus are in a Tier 2 high fire-threat district for elevated fire threat. The majority of the Hill Campus East, as well as portions of the Hill Campus West and the Clark Kerr Campus, are in a Tier 3 high fire-threat district for extreme fire threat. The Campus Park and City Environs Properties are not in a CPUC high fire-threat district.²⁴

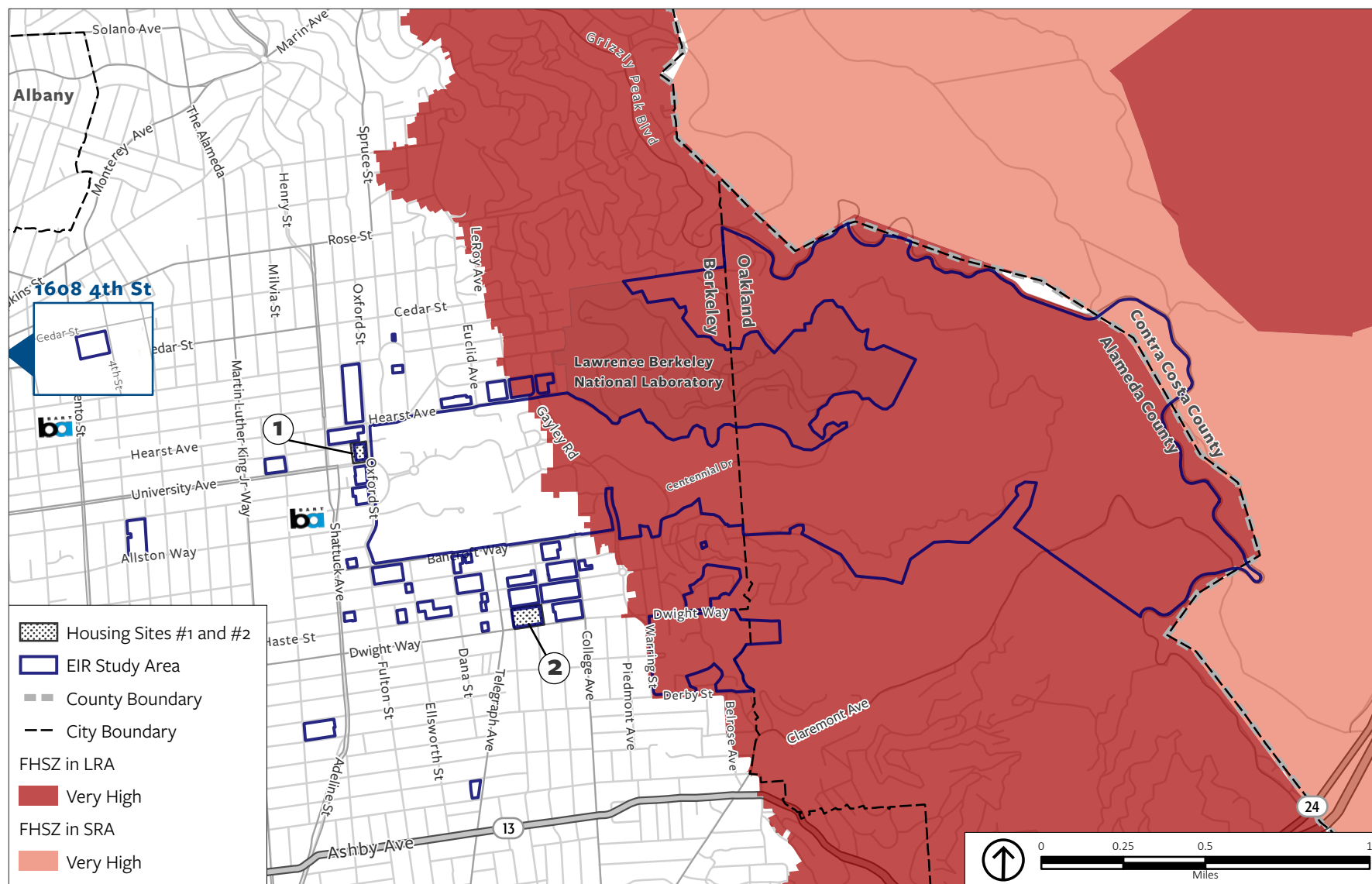
²⁰ City of Berkeley, 2019, 2019 Local Hazard Mitigation Plan.

²¹ City of Berkeley, 2019, 2019 Local Hazard Mitigation Plan.

²² California Department of Forestry and Fire Protection, 2008, Alameda County Very High Fire Hazard Severity Zones in LRA map.

²³ California Department of Forestry and Fire Protection, 2007, Contra Costa County Fire Hazard Severity Zones in SRA map.

²⁴ California Public Utilities Commission, 2019, CPUC Fire Map, <https://ia.cpuc.ca.gov/firemap/>, accessed December 17, 2020.



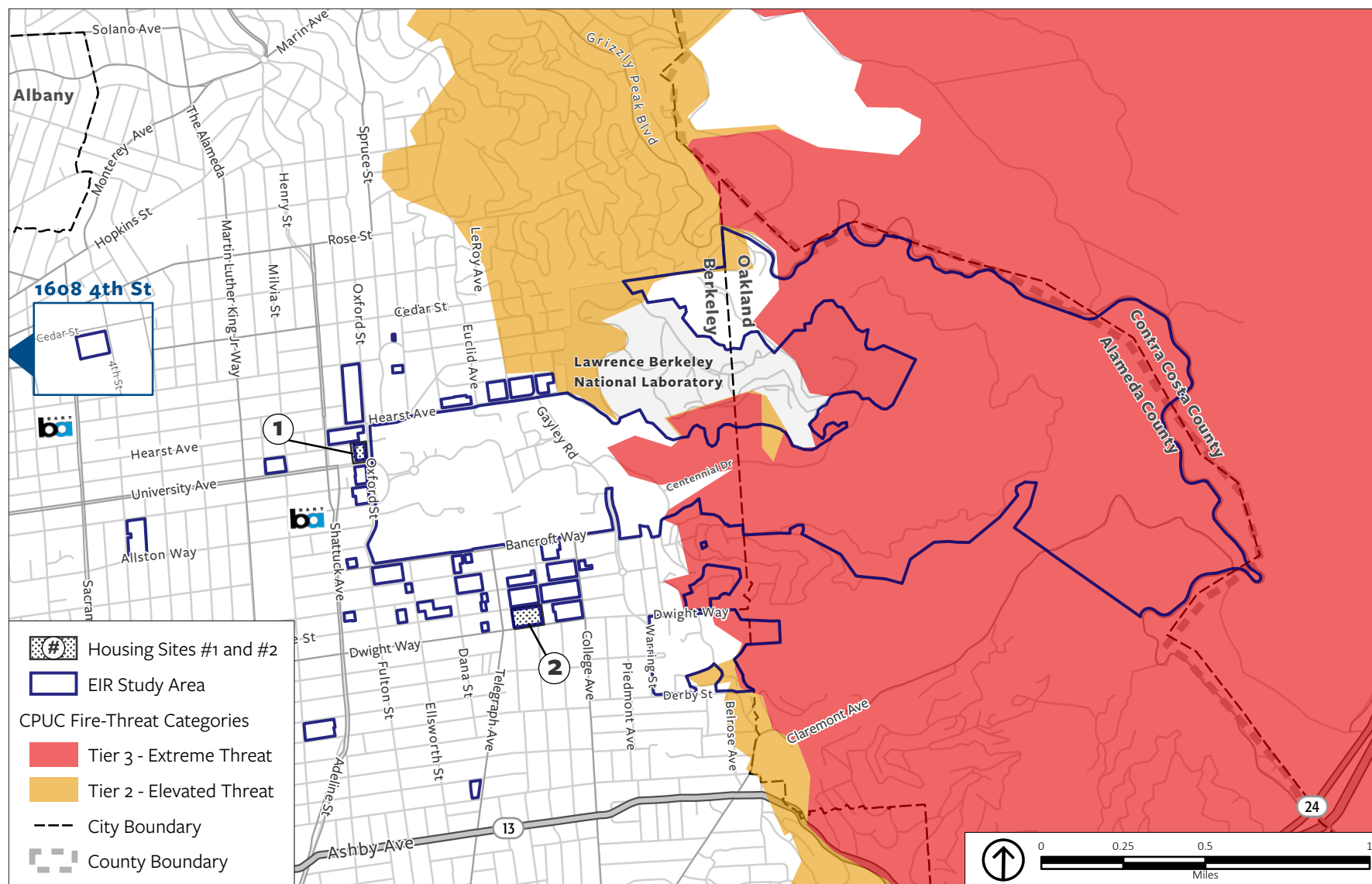
Source: Alameda County, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

FHSZ: Fire Hazard Severity Zone

LRA: Local Responsibility Area

SRA: State Responsibility Area

Figure 5.18-1
Fire Hazard Severity Zones



Source: Alameda County, 2019; CalFire, 2015; CPUC, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Figure 5.18-2
California Public Utilities Commission High Fire-Threat Districts

Aside from the western portion of the Campus Park and some UC Berkeley properties in the City Environs Properties, the majority of the EIR Study Area within the city of Berkeley boundaries is in areas that the City designates WUI, specifically, Fire Zone 2. The Panoramic Hill Area is near California Memorial Stadium and is designated Hazardous Fire Zone 3, with the greatest WUI hazard in the city. This neighborhood is an architecturally significant residential district, listed in the National Register of Historic Places, and contains about 280 dwelling units primarily within Berkeley's jurisdiction, but also some in Oakland. Many of the homes in this neighborhood are constructed of particularly flammable materials, such as wood shake and shingle roofs, and are surrounded by brush-type vegetation susceptible to fire. This area also has limited water supply, access and egress routes, and exposure to rupture of the Hayward Fault, the location of which is shown in Figure 5.6-3, Wildland Urban Interface.²⁵

According to Oakland's identification of WUI—described under Section 5.18.1.1, Regulatory Framework—the entire portion of the EIR Study Area that falls within the City of Oakland boundaries, which includes the Hill Campus East and a small portion of the Clark Kerr Campus, is in Oakland's designated WUI.

Defined WUI boundaries can vary between jurisdictions. In addition to the WUI identified by Berkeley and Oakland, CAL FIRE has identified WUIs statewide. The CAL FIRE WUI is shown in Figure 5.18-3, Wildland Urban Interface. CAL FIRE designates this area as “moderate,” “high,” and “very high” severity zones. CAL FIRE maps the WUI as dense housing adjacent to vegetation that can burn in a wildfire and meets all the following criteria:

- Falls within housing density class 2 (one house per 20 acres to one house per 5 acres), class 3 (more than one house per 5 acres to one house per acre), or class 4 (more than one house per acre).
- Is located in a moderate, high, or very high FHSZ.
- Is not dominated by wildland vegetation.

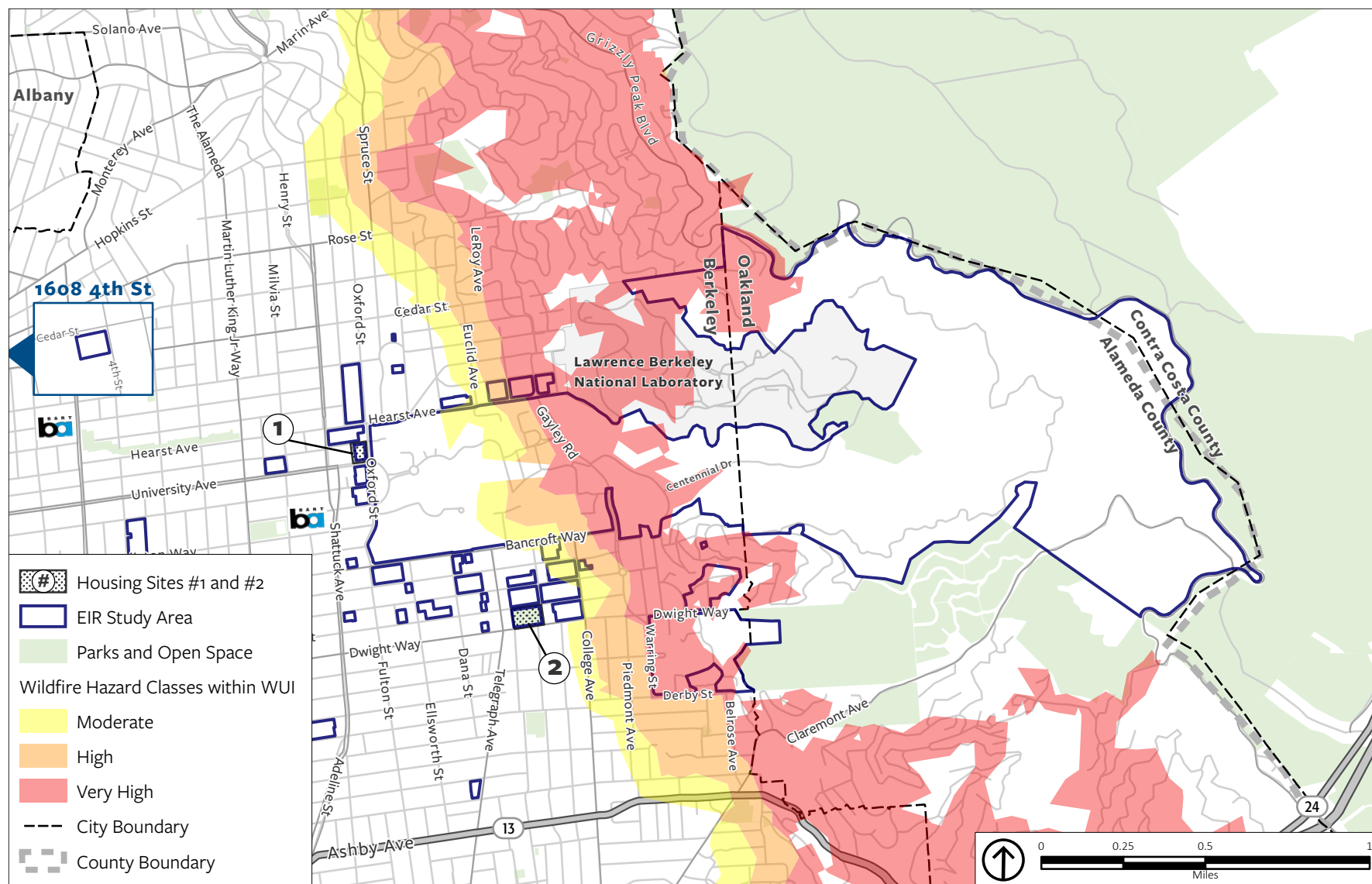
Areas with less than one house per 20 acres are not included. The CAL FIRE WUI combined with FHSZs roughly equal the WUI defined by Berkeley and Oakland.

Topography and Landcover

The topography in the EIR Study Area is diverse, with rolling hills, valleys, and ridges as the land slopes downward to the west. Though land on the western half of the EIR Study Area is relatively flat, the eastern half of the EIR Study Area has steep hills and canyons, most notably within the Hill Campus East. As described in Chapter 3, Project Description, of this Draft EIR, dominant nonurban vegetation in this area includes a wide variety of native and nonnative trees, shrubs, and groundcovers, including eucalyptus, conifers, blue gum, oak-bay woodland, north coastal scrub, native grasses, and riparian scrub and woodland. Wildfire can spread much more quickly up slopes than on level terrain because wind and slope can tilt the flames over unburned fuel and bring it to ignition temperature sooner.²⁶ These steep hills and valleys and those of the similar surrounding areas would also be more susceptible to debris flow after a fire.

²⁵ City of Berkeley, 2019, *2019 Local Hazard Mitigation Plan*.

²⁶ United States Department of Agriculture. June 1983. *How to Predict the Spread and Intensity of Forest and Range Fires*, page 39.



Source: Alameda County, 2019; CalFire, 2015; CPUC, 2019; ESRI, 2020; PlaceWorks, 2021; Sasaki and Page, 2019.

Figure 5.18-3
Wildland Urban Interface

Weather and Winds

The San Francisco Bay area has a Mediterranean-like climate with a rainy season during the winter and dry season during the summer. The National Weather Service issues “red flag” weather day warnings when certain weather elements could lead to increased wildfire risk, such as low relative humidity and strong winds. Extreme but periodic red-flag weather days occur in the EIR Study Area and surrounding areas from the presence of strong, hot, dry offshore winds, referred to in the San Francisco Bay area as “Diablo Winds” since they come from the north and northeast toward Mount Diablo, which is roughly 16 miles east of the EIR Study Area. These winds carry dry air at high velocity and are especially dangerous during the drier months of the year in late summer and fall. The warmer weather, lower humidity, and presence of these winds make wildfires more likely during this time of year in the EIR Study Area.²⁷

Fire Protection Resources

UC Berkeley’s Emergency Management Office coordinates activities necessary for preparing for and responding to emergencies such as wildfires. Each UC Berkeley building has a building emergency plan that is updated annually and is made available for all department personnel. In addition, all faculty and staff are required to have necessary health and safety training, such as how to evacuate when necessary. UC Berkeley works closely with external and internal fire management partners related to regional wildfire prevention, including Diablo Firesafe Council, various neighborhood groups, and internal interdisciplinary planning teams. UC Berkeley also partners with Hills Emergency Forum, which consists of multiple local agencies, including UC Berkeley; the cities of Berkeley, El Cerrito, and Oakland; CAL FIRE; East Bay Municipal Utility District; East Bay Regional Park District; Lawrence Berkeley National Laboratory; and the Moraga-Orinda Fire District. Its mission is to coordinate and share information on the East Bay hills fire hazards.²⁸

Local fire protection resources also include the Berkeley Fire Department, the Oakland Fire Department, the Alameda County Fire Department, and the East Bay Regional Park District Fire Department. Though the cities of Berkeley and Oakland have their own fire departments, the Alameda County Fire Department serves unincorporated areas of Alameda County (excluding Fairview); the cities of San Leandro, Dublin, Newark, Union City, and Emeryville; and the Lawrence Berkeley and Lawrence Livermore National Laboratories.²⁹ The Lawrence Berkeley National Laboratory (LBNL) is adjacent to the EIR Study Area, on the north side of the Hill Campus East subarea. Alameda County Fire Department’s Fire Station Number 19 is located at LBNL and houses an engine company, patrol, and hazardous materials unit, and provides services to LBNL and portions of the UC Berkeley campus.

Housing Projects #1 and #2

Although in close proximity to designated FHSZs, CPUC high fire-threat districts, and WUI areas, neither Housing Project #1 nor Housing Project #2 is in a designated FHSZ, CPUC high-fire threat district, or WUI.

²⁷ Diablo Fire Safe Council, 2015, Community Wildfire Protection Plan 2015 Update, Alameda County.

²⁸ Hills Emergency Forum, 2019, <http://www.hillsemergencyforum.org/docs/HEFmemberagencies2019.pdf>, accessed November 4, 2020.

²⁹ Alameda County Fire Department, General Information, <https://www.acgov.org/fire/about/>, accessed July 20, 2020.

Housing Project #1 is approximately 0.5 miles west of the Alameda County LRA Very High FHSZ, 0.5 miles west of the nearest CPUC high fire-threat district, and 0.3 miles west of the City of Berkeley's WUI. Housing Project #2 is approximately 0.25 miles west of the Alameda County LRA Very High FHSZ, 0.4 miles west of the nearest CPUC high fire-threat district, and 0.1 miles west of Berkeley's WUI. Though neither project is in these fire hazard areas, like the rest of the city of Berkeley and surrounding areas, they are still close enough to be vulnerable to wildfires that start in the East Bay hills and spread, as has happened before.

5.18.2 STANDARDS OF SIGNIFICANCE

If located in or near SRAs or lands classified as Very High FHSZs, the proposed project would result in a significant wildfire impact if it would:

1. Substantially impair an adopted emergency response plan or emergency evacuation plan.
2. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
3. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
4. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.
5. In combination with past, present, and reasonably foreseeable projects, result in a cumulative impact.

5.18.3 IMPACT DISCUSSION

The standards listed in Section 5.18.2, Standards of Significance, apply to projects that are in or near an SRA or in a Very High FHSZ. As shown in Figure 5.18-1, only a small part of the EIR Study Area is in an SRA, that is, where the EIR Study Area crosses into Contra Costa County, and the proposed project does not include any changes to or development in this area. However, the eastern part of the EIR Study Area is partly in the Very High FHSZ for the Alameda County LRA, including the entirety of the Hill Campus West and the Clark Kerr Campus, a majority of the Hill Campus East, and portions of the Campus Park and some UC Berkeley properties within the City Environs Properties. The rest of the EIR Study Area may be considered "near" lands within the SRA or lands within a Very High FHSZ because they are adjacent to these areas. Therefore, the standards of significance in Section 5.18.2 apply to the proposed project.

WF-1	The proposed project would not substantially impair an adopted emergency response plan or emergency evacuation plan.
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LRDP Update

The proposed project would result in a significant impact if it would substantially impair an adopted emergency response plan or emergency evacuation plan. The EIR Study Area falls within the emergency plans of several agencies. Adopted emergency response plans and emergency evacuation plans include

those discussed under Section 5.18.1.1, Regulatory Framework, such as UC Berkeley's Emergency Preparedness Program and EOP; Alameda and Contra Costa counties' CWPPs and EOPs; and the City of Berkeley and City of Oakland LHMPs.

Only a small portion of the EIR Study Area is in Contra Costa County. This area does not have any proposed changes from its current status as open space within the Hill Campus East under the proposed project. All of the potential development under the proposed project would occur within Alameda County. The eastern portion of the EIR Study Area where Alameda County and Contra Costa County share a boundary consists of hilly terrain, which results in limited access and limited operations in this area. In addition, based on current population patterns, as described in Chapter 5.12, Population and Housing, the majority of UC Berkeley's population resides in Alameda County. Though a potential wildfire in or near the EIR Study Area would necessitate all nearby cities and counties to follow necessary precautions and emergency response procedures, Contra Costa County would not need to revise its emergency procedures as a result of the proposed project, such as the emergency response command structures, wildfire reduction strategies, or evacuation protocols that are currently part of its CWPP and EOP, because the proposed project would not result in substantial physical change or population changes in Contra Costa County. Therefore, the project would not substantially impair adopted emergency response and operations plans for Contra Costa County.

The proposed project would have greater influence in Alameda County and the cities of Berkeley and Oakland because the EIR Study Area is primarily located within these areas. However, the EIR Study Area, excluding the Hill Campus East, is already densely developed and populated. Most potential development under the proposed LRDP Update would be infill development, and increases in population would be gradual over the buildout horizon of the proposed LRDP Update. The proposed LRDP Update would not result in new roadways or changes to existing roadways and would include little development of previously undeveloped sites.

As described under Section 5.18.1.1, Regulatory Framework, UC Berkeley has its own Emergency Preparedness Program and EOP, and coordinates emergency preparations, response, and recovery activities such as those pertaining to wildfire under its Office of Emergency Management. UC Berkeley implements its EOP to ensure the most effective allocation of resources for the maximum benefit and protection of the civilian population in times of emergency. The proposed LRDP Update would not necessitate changes to these plans. Any potential development under the proposed LRDP Update would be required to integrate these plans as necessary in order to continue their facilitation for the UC Berkeley population. In addition, potential development would be required to comply with applicable regulations that involve fire prevention and safety measures, such as the CBC and CFC. Examples of relevant measures included in these regulations include adequate egress capability and identification of evacuation areas.

An impact to emergency operations and evacuations under the proposed project could occur from construction of potential future development projects if they were to result in temporary road closures, therefore potentially altering emergency evacuation routes. Development of the proposed project in this way could potentially interfere with UC Berkeley's and other local agencies' emergency response and evacuation plans through construction-related road closures. UC Berkeley, in partnership with LBNL, will construct a new overcrossing and reroute of Centennial Bridge, which would help to improve emergency access in the Hill Campus East. Though no physical modifications to the existing roadway network would be

part of the proposed project, the reduction of lanes or temporary closures of certain streets due to construction could interfere with routes of emergency vehicles or evacuation. However, these would be limited to the duration of the construction period and only affect adjacent streets. If streets would require temporary closures or interference, construction projects would be required to use construction traffic management plans pursuant to CBP TRAN-5 in Chapter 5.15, Transportation, of this Draft EIR, which requires traffic control plans for expected traffic detours and compliance with City requirements when working within public rights-of-way. In addition to this CBP, the proposed LRDP Update includes several objectives that would reduce the risk of a wildfire emergency and ensure adequate emergency response and evacuation. LRDP Update includes the following Land Use Element objectives:

- Reduce risk to life, property, and natural resources by managing vegetation and by improving emergency evacuation and access routes, guided by the Hill Campus Wildland Vegetative Fuel Management Plan. Highly flammable plant species should be removed over time, while the growth of fire-resistant species to reduce wildfire risks and enhance biodiversity should be prioritized.
- Prioritize improvements that address life-safety concerns, particularly open space, circulation, and landscape interventions related to wildfire, landslides, evacuation, and seismic safety.

In addition, the Infrastructure, Resilience, and Emergency Systems Element has this objective:

- Adopt fire management strategies to mitigate fire risk and impacts across university properties. Prioritize the implementation of the Wildland Vegetative Fuel Management Plan for the Hill Campus East, and explore opportunities to mitigate the impacts of fire smoke in building design and on campus operations.

The proposed LRDP Update would accommodate an increase in UC Berkeley's population and traffic congestion may increase over the life of the LRDP Update, which could adversely affect emergency response or evacuation routes in the event of an accident or natural disaster. However, the buildout of the proposed LRDP Update would not result in substantial changes to circulation patterns or emergency access routes and would not block or otherwise interfere with use of evacuation routes. In addition, as discussed in Chapter 5.15, Transportation, of this Draft EIR, under the proposed LRDP Update, it is anticipated that a smaller percentage of employees and students would drive alone to UC Berkeley facilities because of enhanced transportation demand management programs, additional UC Berkeley housing, and less parking availability, and therefore it is not anticipated that UC Berkeley's population would substantially increase vehicle miles traveled. The proposed LRDP Update seeks to reduce vehicular travel, which would help to reduce the potential for congestion that would impede evacuation.

Compliance with and incorporation of existing regulations and emergency response and evacuation plans as described above would ensure that wildfire impacts in this respect would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #1

The proposed Housing Project #1 would result in a significant impact if it would involve physical improvements that would impede emergency response to the project site or the immediate vicinity, or if it

would otherwise interfere with emergency evacuation plans. As described above and shown in Figure 5.18-1, Fire Hazard Severity Zones; Figure 5.18-2, California Public Utilities Commission High Fire-Threat Districts; and Figure 5.18-3, Wildland Urban Interface, Housing Project #1 is not located within a designated FHSZ, CPUC high fire-threat district, or WUI. It is in an urbanized area surrounded by existing development. However, as it is within one-half mile of the Alameda County LRA Very High FHSZ and close to a designated FHSZ, and it is therefore vulnerable to wildfires in this area. The Berkeley General Plan identifies Oxford Street and University Avenue, two roadways adjacent to the Housing Project #1 site, as emergency evacuation routes.³⁰ Development of Housing Project #1 would include improvements to Oxford Street to improve pedestrian and bicycle circulation, but would not reduce vehicular access along this street or other surrounding roadways. Though construction could create temporarily disrupt adjacent traffic patterns, implementation of construction traffic management plans, pursuant to CBP TRAN-5, and compliance with necessary City requirements when working within public rights-of-way would prevent temporary impairment of emergency response or emergency evacuation procedures. In addition, though the proposed LRDP Update would be associated with an increase in UC Berkeley's population, Housing Project #1 is a near-term project that would serve the existing population. Therefore, Housing Project #1 would not substantially impair an adopted emergency response plan or emergency evacuation plan, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The proposed Housing Project #2 would result in a significant impact if it would involve physical improvements that would impede emergency response to the project site or the immediate vicinity, or if it would otherwise interfere with emergency evacuation plans. As described above and shown in Figure 5.18-1, Fire Hazard Severity Zones; Figure 5.18-2, California Public Utilities Commission High Fire-Threat Districts; and Figure 5.18-3, Wildland Urban Interface, Housing Project #2 is not in a designated FHSZ, CPUC high fire-threat district, or WUI. However, as it is within one-quarter mile of the Alameda County LRA Very High FHSZ and close to a designated FHSZ, and therefore vulnerable to wildfires in this area. The Berkeley General Plan identifies Dwight Way and Haste Street as emergency evacuation routes; however, the development of Housing Project #2 would not alter these or other surrounding roadways.³¹ Similar to Housing Project #1, though construction could create temporary disruptions to adjacent traffic patterns, implementation of construction traffic management plans, pursuant to CBP TRAN-6, and compliance with necessary City requirements when working within public rights-of-way as necessary would prevent impairment of emergency response or emergency evacuation procedures. Furthermore, though the proposed LRDP Update would be associated with an increase in population, Housing Project #2 is a near-term project that would serve the existing UC Berkeley population. Therefore, Housing Project #2 would not substantially impair an adopted emergency response plan or emergency evacuation plan, and impacts would be *less than significant*.

³⁰ City of Berkeley. June 13, 2011. *Emergency Evacuation and Access Network*.

³¹ City of Berkeley, 2011, *Emergency Evacuation and Access Network*.

Significance without Mitigation: Less than significant.

WF-2	The proposed project could, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
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LRDP Update

As discussed in Section 5.18.1.2, Existing Conditions, the EIR Study Area’s location in the San Francisco Bay area is prone to strong, hot, dry offshore winds that can become dangerous by enabling wildfires during drier months of the year. Implementation of the proposed project would not change or affect prevailing winds, but wildfires and fire-related air pollution hazards that originate in the EIR Study Area could be spread by prevailing winds.

Section 5.18.1.1, Regulatory Framework, describes plans, policies, regulations, and procedures that help to reduce wildfire risks. The Alameda and Contra Costa CWPPs, the Berkeley and Oakland LHMPs, and UC Berkeley’s Emergency Preparedness Program, EOP, and Wildland Vegetative Fuel Management Plan are intended to reduce and respond to wildfire hazards on a regional scale. In addition, the Bay Area Air Quality Management District provides air quality alerts, advisories, and forecasts and maintains an interactive online map to view current air quality conditions in the region. Existing regulatory requirements and policies that reduce wildfire risks overall would minimize the exposure of people to air pollutants from wildfires due to prevailing winds.

As discussed in Section 5.18.1.2, Existing Conditions, the EIR Study Area has varied topography. Construction on sloped project sites may require grading and site preparation activities that could change the slope of a single parcel or site. Most development would be in the urbanized areas of the Campus Park, the City Environs Properties, and the Clark Kerr Campus, where the topography is relatively flat. Some development could occur within the Hill Campus West, where topography is steeper; however, this area is also largely already built out and it does not contain any large areas of vegetation. Some development would potentially occur in the Hill Campus East where the topography contains significant slopes and is largely undeveloped, including the construction of additional academic life space, utility infrastructure upgrades, and the potential addition of a solar panel array, as described in Chapter 3, Project Description. Parts of the Hill Campus East are adjacent to residential neighborhoods in the Berkeley/Oakland hills. The precise location of these developments and improvements within the Hill Campus East is unknown, and therefore it is possible that development could occur in areas with steep slopes or near sloped areas. The addition of construction and development projects within steeply sloped areas of the Hill Campus East could exacerbate risks because wildfires are able to spread more quickly up steep slopes. In addition, impacts such as loose debris from wildfires could impact areas downslope.

Other factors, such as vegetation, have the potential to exacerbate wildfire risks. The grassland and oak-bay woodland of the Hill Campus East are easily ignited; during late summer and fall, natural vegetation is extremely flammable, and wildfires are serious hazards in areas with extensive, unirrigated vegetation.

As part of the proposed project, UC Berkeley and future development projects would implement the wildfire (WF) CBPs listed here. This list identifies the CBPs that have been updated as described in Chapter 5, Environmental Analysis, of this Draft EIR:

- **CBP WF-1:** UC Berkeley will continue to comply with the California Public Resources Code Section 4291, which mandates firebreaks of 100 feet around buildings or structures in, upon, or adjoining any mountainous, forested, or brush- or grass-covered lands.
- **CBP WF-2 (Updated):** UC Berkeley will conduct vegetation management under its approved Wildland Vegetative Fuel Management Plan.
- **CBP WF-3:** UC Berkeley will continue to plan and implement programs to reduce risk of wildland fires, including plan review and construction inspection programs that ensure that its projects incorporate fire prevention measures.
- **CBP WF-4:** UC Berkeley will continue to plan and collaborate with other agencies through participation in the Hills Emergency Forum.

These CBPs would ensure that vegetation is properly managed for wildfire hazard reduction, and that development in areas surrounded by heavy vegetation would incorporate measures such as firebreaks. In addition, with adherence to these CBPs, projects in steeply sloped areas would take into consideration measures for reducing impacts due to slope, such as landslides from postfire instability as well as wildfire risks in general. The ongoing implementation of CBP WF-1 through CBP WF-4, and the CBPs discussed throughout this Draft EIR and listed in Appendix B, UC Berkeley 2021 LRDP Continuing Best Practices, would not create additional wildfire risks. As described in Chapter 5, Environmental Analysis, while the activities associated with these CBPs may involve temporary physical effects during construction and short-term operational physical effects, these effects would be nominal when compared to the overall effects of the development projects with which they are associated, and it would be speculative to attempt to quantify these effects when implemented as part of future development projects. In addition, any noise and air emissions associated with these CBPs would occur in the Hill Campus East in compliance with UC Berkeley's Wildland Vegetative Fuel Management Plan, which contains measures to prevent fire hazards associated with equipment usage.

Potential future development under the proposed LRDP Update would be required to submit grading plans and construction drawings for UC Berkeley review and comply with the CBC, CFC, and PRC Sections 4201 through 4204, 4290, 4291, and 4442. Implementation of CBP WF-1 through CBP WF-4 would ensure that future projects within the Hill Campus East are evaluated and designed to incorporate best practices to reduce wildfire-related hazards. However, due to the programmatic nature of this analysis, and the unknown details and potential impacts of specific future development projects, impacts would be potentially *significant*.

Impact WF-2: Development under the proposed LRDP Update could include an increase in academic life space, utility infrastructure upgrades, and energy resilience projects within the Hill Campus East, which is in a Very High FHSZ and has steep terrain and heavy vegetation. Development within this area could exacerbate wildfire risks.

Mitigation Measure WF-2a: Project sponsors for new UC Berkeley development within a Very High Fire Hazard Severity Zone shall prepare and implement a Wildfire Management Plan to prevent wildfires from construction and operation of new development. A Wildfire Management Plan shall include, but not be limited to, the following:

- The objectives of the plan.
- Responsibilities of persons responsible for executing the plan.
- Location of applicable infrastructure covered under the plan.
- Plans for vegetation management, and incorporation of vegetation management strategies from the UC Berkeley's Wildland Vegetative Fuel Management Plan.
- Plans for emergency access and evacuation that ensure adequate access to and throughout the site for emergency responders, and adequate egress from the site for evacuation events.
- A list that identifies, describes, and prioritizes all wildfire risks associated with the infrastructure.
- Plans for post-fire hazard mitigation, including for protection of areas downslope from debris slides.
- Plans for regular inspections of electrical infrastructure.

The Wildfire Management Plan shall be submitted to the UC Berkeley project manager and the Campus Fire Marshal for review and approval prior to initiation of construction activities.

Mitigation Measure WF-2b: Vegetation and wildland management activities shall comply with Public Resources Code Section 4442, which requires that engines that use hydrocarbon fuels be equipped with a spark arrester, and that these engines be maintained in effective working order to help prevent fire. These activities shall also comply with the Environmental Protection Measures in the UC Berkeley Wildland Vegetative Fuel Management Plan. UC Berkeley's Office of Physical & Environmental Planning shall verify compliance with this measure for ongoing UC Berkeley vegetation management activities and for future development projects.

Significance with Mitigation: Significant and unavoidable. Development of potential future projects within the Hill Campus East under the proposed LRDP Update shall implement CBP WF-1 through CBP WF-4, and Mitigation Measures WF-2a and WF-2b, and would be subject to future project approval. Future projects could be required to implement site-specific mitigation measures to reduce potentially significant environmental impacts. In addition, potential future development under the proposed LRDP Update would be required to submit grading plans and construction drawings for UC Berkeley review and comply with the CBC, CFC, and PRC Sections 4201 through 4204, 4290, 4291, and 4442. This conclusion does not prevent a finding of less-than-significant impacts at the project level; however, due to potential unknown impacts from future development within the Hill Campus East under the proposed LRDP Update, impacts at the programmatic level would remain significant and unavoidable.

Housing Project #1

Housing Project #1 would be located in Downtown Berkeley on an already developed site lacking vegetation and surrounded by existing development. The Housing Project #1 site is relatively flat and would therefore not result in wildfire-related impacts due to slope. In addition, because it is already in an urbanized area and is not in a FHSZ or the WUI, Housing Project #1 would not, from prevailing winds or other factors such as vegetation, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Therefore, impacts in this respect would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The Housing Project #2 site is relatively flat and located in an urbanized area surrounded by existing development. The site is not within a FHSZ or the WUI. Therefore, Housing Project #2 would not, due to slope, prevailing winds, or other factors such as vegetation, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire, and impacts in this respect would be *less than significant*.

Significance without Mitigation: Less than significant.

WF-3	The proposed project would require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
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LRDP Update

As described in Chapter 3, Project Description, the proposed LRDP Update would include infrastructure improvements to upgrade aging infrastructure and ensure that utilities can adequately support environmental and climate changes and buildout and population projections. These infrastructure upgrades would involve repair and/or replacement of aging potable and fire water pipes, potential development of an on-site wastewater treatment facility on the Campus Park for nonpotable water usage, and upsizing or replacement of aging sewer lines and storm drains. The proposed LRDP Update also includes potential upgrades to the existing cogeneration plant on the Campus Park, improvements to the electrical network to accommodate increased load, and the potential incorporation of new renewable energy systems. These types of improvements would result in minor changes to the existing built environment and would involve temporary construction. Infrastructure improvements would be located throughout the EIR Study Area, including some improvement projects in the Campus Park, the Hill Campus West, the Hill Campus East, the Clark Kerr Campus, and the City Environs Properties, areas of which fall within the Very High FHSZ and are at greater risk of wildfires.

Among the potential energy infrastructure upgrades described in Chapter 3, Project Description, is the addition of a photovoltaic solar installation occupying a maximum area of 200 acres in the Hill Campus East. The addition of this system would add electrical infrastructure, construction equipment during the temporary construction process, and ongoing site activity associated with maintenance and operational activities, to the Hill Campus East in a Very High FHSZ.

Any development or redevelopment within the Very High FHSZ and the WUI would be required to comply with building design standards within the CBC, Chapter 49 of the CFC, and the CPUC's fire regulations for electric utilities, which would reduce the risk of wildfire due to installation and maintenance of infrastructure. Construction activities would be required to comply with PRC Section 4442, which regulates the use of internal combustion engines that use hydrocarbon fuels on forest-covered land, brush-covered land, and grass-covered land and requires spark arresters. Operation and maintenance of overhead power lines would be required to comply with fire safety regulations pertaining to electric utilities, including 14 CCR Sections 1250 et seq., which provide requirements for vegetation clearance around poles, towers, and wires; and CPUC fire safety regulations, which provide requirements for wire-to-wire clearances, vegetation clearances, inspections of overhead distribution facilities, and preparation of a fire prevention plan. In addition, potential future development in these areas would incorporate the CBP WF-1 through CBP WF-4, listed under impact discussion WF-2.

A specific solar array system is not currently designed or proposed but could potentially be added to the EIR Study Area during the buildout horizon for the proposed LRDP Update analyzed in this Draft EIR. Though the above practices would help to reduce wildfire risks associated with construction projects, structures, and vegetation management in the Hill Campus East and WUI, the addition of a solar array system in the Hill Campus East poses specific potential issues with introducing additional electrical utility infrastructure in a Very High FHSZ that could increase risk of wildfire. For example, new power lines could ignite wildfires if overhead lines fall down and come into contact with vegetation.

In addition, though the majority of the Hill Campus East would remain undeveloped, the potential exists for an increase in academic life space, as shown in Table 3-1, Proposed LRDP Update Buildout Projections, in Chapter 3, Project Description, of this Draft EIR. Potential future development projects in the Hill Campus East in general could require the installation or maintenance of associated infrastructure such as roads, fuel breaks, emergency water sources, power lines, or other utilities that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Therefore, because specific project details are not yet known, impacts would have the potential to be *significant*.

Impact WF-3: The proposed LRDP Update could involve the installation or maintenance of infrastructure such as roads, fuel breaks, emergency water sources, power lines, or other utilities associated with potential development within the Very High FHSZ, including with the potential addition of a solar array installation in the Hill Campus East. Construction and operation of these improvements could exacerbate fire risk through construction and maintenance activities and/or through the introduction of additional electrical infrastructure.

Mitigation Measure WF-3: Electrical lines associated with future electrical infrastructure shall be undergrounded, where feasible. UC Berkeley shall verify compliance with this measure as part of plan review prior to construction.

Significance with Mitigation: Significant and unavoidable. Though Mitigation Measure WF-3 would ensure that associated infrastructure from potential future development projects, including the installation and maintenance of a potential solar array and/or associated power lines, are assessed for wildfire impacts and any potential impacts mitigated, due to potential unknown impacts from future development within the Very High FHSZ under the proposed LRDP Update, impacts at the programmatic level of the proposed LRDP Update would remain significant and unavoidable. Development of potential future projects within the Hill Campus East under the proposed LRDP Update shall implement CBP WF-1 through CBP WF-4, and Mitigation Measure WF-3, and would be subject to future project approval. Future projects could be required to implement site-specific mitigation measures to reduce potentially significant environmental impacts. In addition, potential future development under the proposed LRDP Update would be required to submit grading plans and construction drawings for UC Berkeley review and comply with the CBC, CFC, and PRC Sections 4201 through 4204, 4290, 4291, and 4442. This conclusion does not prevent future projects under the proposed LRDP Update from being determined to have less-than-significant impacts.

Housing Project #1

Housing Project #1 would not require alteration of existing roadways. As described in Chapter 5.17, Utilities and Service Systems, the site is currently served by existing utility systems, and the project would not require the installation of additional off-site utilities infrastructure, such as water sources, power lines, or other utilities, that could exacerbate fire risk or result in temporary or ongoing impacts to the environment. Due to the location of the Housing Project #1 site outside of fire hazard severity zones and the WUI, the installation of on-site utilities, including roof-mounted solar panels, would not exacerbate fire risks. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

Housing Project #2 would not require alteration of existing roadways. As described in Chapter 5.17, Utilities and Service Systems, the site would connect to surrounding existing utilities. The project would not require additional off-site utilities infrastructure, such as water sources, power lines, or other utilities, to be installed other than these connections. Due to the location of the Housing Project #2 site outside of fire hazard severity zones and the WUI, the installation of on-site utilities, including roof-mounted solar panels, would not exacerbate fire risks. Therefore, impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

WF-4	The proposed project could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.
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LRDP Update

Catastrophic wildfire can create favorable conditions for other hazards, such as flooding and landslides during the rainy season. A project would result in a significant impact if, due to slopes, drainage patterns, or postfire slope instability, it would expose people or structures to significant risks from landslides, debris flows, or flooding following a wildfire.

With respect to flooding, as described in Chapter 5.9, Hydrology and Water Quality, of this Draft EIR, land immediately adjacent to Strawberry Creek and the Grinnell Natural Area are within a 100-year floodplain that is subject to overflow from the North and South Forks of the creek, but no other areas in the EIR Study Area are within a flood hazard zone. Therefore, there are no areas of the EIR Study Area in which the proposed LRDP Update is expected to exacerbate flood-related wildfire hazards.

As discussed in Chapter 5.6, Geology and Soils, of this Draft EIR, the Hill Campus East is the only zone in the EIR Study Area that would be susceptible to landslides and debris flows. Only very gentle slopes are in the Campus Park, the Hill Campus West, the Clark Kerr Campus, and the City Environs Properties, and these areas would not be subject to landslide hazards. Therefore, this analysis focuses on potential impacts in the Hill Campus East.

The majority of potential development under the proposed LRDP Update would occur in existing urban areas and would primarily consist of infill and intensification on sites already developed, potential development in the Hill Campus East would include an increase in academic life space and installation of a solar array system. The proposed LRDP Update also includes infrastructure upgrades, which would likely result in minor changes to the existing built environment within the Hill Campus East. Construction activities, such as vegetation clearing, grading, and excavation, could temporarily increase erosion and sedimentation in the construction area. However, all construction activities would be required to comply with applicable regulations mitigating erosion and drainage changes, such as those under the National Pollutant Discharge Elimination System (NPDES) and Construction General Permit (described in detail in Chapter 5.9, Hydrology and Water Quality). For example, potential future development and redevelopment that involves the disturbance of one or more acre of land would be subject to NPDES construction permit requirements, including preparation of a Stormwater Pollution Prevention Plan, which includes best management practices to limit the discharge of sediment and nonstorm water discharges from the site.

While these practices generally reduce environmental impacts pertaining to flooding and landslides, construction under the proposed LRDP Update could still expose people or structures to risks including downslope landslides as a result of postfire instability. As described under impact discussions WF-2 and WF-3, UC Berkeley would implement CBP WF-1 through CBP WF-4 pertaining to firebreaks, vegetation management, plan review and construction inspection programs. However, impacts related to downslope or downstream flooding or landslides as a result of runoff, postfire slope instability, or drainage changes would be site specific and depend on the location of potential future development. Therefore, due to the

programmatic nature of this analysis and the unknown details and potential impacts of specific future construction projects, impacts would be potentially *significant*.

Impact WF-4: The proposed LRDP Update could involve development within the Hill Campus East, which is in a Very High FHSZ, contains steep terrain, and is largely undeveloped, and which abuts existing residential areas. Therefore, potential development could expose people or structures to downslope landslides as a result of postfire slope instability.

Mitigation Measure WF-4: Implement Mitigation Measure WF-2a.

Significance with Mitigation: Significant and unavoidable. Development of potential future projects within the Hill Campus East under the proposed LRDP Update would be required to comply with Mitigation Measure WF-2a, as well as CBP WF-1 through CBP WF-4. Future projects could be required to implement site-specific measures to reduce potential environmental impacts. However, due to potential unknown impacts from future development within the Hill Campus East under the proposed LRDP Update, impacts at the programmatic level of the proposed LRDP Update would remain significant and unavoidable. This conclusion does not prevent a finding of less-than-significant impacts at the project level.

Housing Project #1

As described in Chapter 5.6, Geology and Soils, the Housing Project #1 site is not subject to landslide hazards. As described in Chapter 5.9, Hydrology and Water Quality, it is also not located within a flood hazard zone. In addition, development of the proposed Housing Project #1 would be required to comply with applicable regulations to manage runoff, as described in Chapter 5.9, Hydrology and Water Quality. Therefore, it would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, postfire slope instability, or drainage changes, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

Housing Project #2

The Housing Project #2 site is in an urbanized area and is surrounded by development. As described in Chapter 5.6, Geology and Soils, the Housing Project #2 site is not located on a significant grade that would be subject to landslide hazards. As described in Chapter 5.9, Hydrology and Water Quality, it is also not located in a flood hazard zone. Development of the proposed Housing Project #2 would be required to comply with applicable regulations to manage runoff; as described in Chapter 5.9, Hydrology and Water Quality, this would include the Construction General Permit, which requires implementation of construction best management practices. Therefore, the project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, postfire slope instability, or drainage changes, and impacts would be *less than significant*.

Significance without Mitigation: Less than significant.

WF-5	The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in significant cumulative impact with respect to wildfires.
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LRDP Update

As discussed in Chapter 5, Environmental Analysis, of this Draft EIR, the cumulative setting includes growth within the EIR Study Area in combination with development in the rest of the cities of Berkeley and Oakland that are within or near lands in the SRA or in a Very High FHSZ. Future development under the proposed project would not interfere with implementation of emergency response or evacuation plans, as explained under impact discussion WF-1. However, the proposed LRDP Update would result in significant and unavoidable impacts where it would potentially expose project occupants to pollutant concentrations from a wildfire or uncontrolled spread of a wildfire due to slope, prevailing winds, or other factors; require the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or expose people or structures to significant risks including downslope landslides as a result of postfire slope instability, as described under impact discussions WF-2, WF-3, and WF-4, respectively. These impacts are associated with potential future development and infrastructure projects in the Hill Campus East.

The addition of other proposed UC Berkeley and non-UC Berkeley development in or near the SRA or in the Very High FHSZ would have the potential to contribute to cumulative wildfire risks. In particular, LBNL proposes several projects listed in Chapter 5, Environmental Analysis, that could contribute to cumulative fire risks. LBNL is in the Very High FHSZ adjacent to the Hill Campus East and also within an area with steep terrain and heavy vegetation. One or more of these cumulative development projects could require the installation or maintenance of associated infrastructure or activities that may exacerbate fire risk. In addition, the cities of Berkeley and Oakland could implement future projects near or within the SRA or Very High FHSZ over the course of the proposed LRDP Update buildout horizon. These projects would have the potential to result in significant environmental impacts and they could also potentially expose project occupants to pollutant concentrations from a wildfire or uncontrolled spread of a wildfire due to slope, prevailing winds, or other factors; require the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, postfire slope instability, or drainage changes. These would potentially result in cumulatively considerable impacts when taken into consideration with the LRDP Update. In general, the increase of potential development projects within the SRA or Very High FHSZ would result in a cumulatively significant impact, and since contributions from the proposed project would result in significant impacts, the proposed project would result in cumulatively considerable impacts. Therefore, cumulative wildfire impacts would be *significant*.

Impact WF-5: Potential development under the proposed LRDP Update could, in combination with other surrounding and future projects in the SRA or Very High FHSZ, result in cumulative impacts associated with the exposure of project occupants to pollutant concentrations from a wildfire or uncontrolled spread of a wildfire due to slope, prevailing winds, or other factors; the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the

environment; or exposure of people or structures to significant risks including downslope landslides as a result of postfire slope instability.

Mitigation Measure WF-5: Implement Mitigation Measures WF-2a, WF-2b, WF-3, and WF-4. No additional feasible mitigation measures are available to reduce this cumulative impact to a less-than-significant level.

Significance with Mitigation: Significant and unavoidable. Because the proposed project would result in significant and unavoidable impacts regarding wildfire at the program level and would contribute cumulatively considerable impacts, cumulative impacts would be significant and unavoidable.

Housing Projects #1 and #2

Though proposed Housing Projects #1 and #2 are near an SRA and lands classified as Very High FHSZs, they are in relatively flat and urbanized areas surrounded by existing development, as described in impact discussions WF-1 through WF-4, and they would not contribute to significant impacts regarding wildfire. Wildfire impacts under the proposed LRDP Update, described above, are largely concerned with potential future development within the Very High FHSZ and WUI, and in particular, the Hill Campus East in areas of steep terrain and heavy vegetation. Because Housing Projects #1 and #2 are outside of these areas and would not substantially contribute to wildfire impacts, they would also not contribute to cumulative impacts. Therefore, cumulative wildfire impacts for Housing Projects #1 and #2 would be *less than significant*.

Significance without Mitigation: Less than significant.

6. Alternatives to the Proposed Project

6.1 INTRODUCTION

This chapter describes the CEQA requirements for evaluating alternatives to the proposed project, describes the project, summarizes the significant effects of the proposed LRDP Update (proposed project) that cannot be avoided or reduced to less than significant, describes the reasonable range of alternatives, including those that were considered but dismissed from further evaluation. The chapter then considers the comparative environmental effects of each of the alternatives relative to those of the proposed project and evaluates the relationship of the alternatives to the project objectives. As required under CEQA Guidelines Section 15126.6(e), an environmentally superior alternative is identified at the end of this chapter, followed by a summary of the alternative's ability to meet the basic project objectives.

CEQA Guidelines Sections 15126.6(a) and (d) require that an EIR describe and evaluate a range of reasonable alternatives to the proposed project, or to the location of the proposed project, and evaluate the comparative merits of the alternatives. CEQA Guidelines Section 15126.6(a) and (f) describe that the “range of alternatives” is governed by the “rule of reason,” which requires the EIR to describe and consider only those alternatives necessary to permit informed public participation, and an informed and reasoned choice by the decision-making body.

Pursuant to CEQA Guidelines Section 15126.6(a) through (c), the range of alternatives must include alternatives that could feasibly attain most of the basic objectives of the project and could avoid or substantially lessen any of the significant effects of the project. CEQA Guidelines Section 15126.6(f)(1) generally defines “feasible” to mean an alternative that is capable of being accomplished in a successful manner within a reasonable period, considering economic, environmental, social, technological, and legal factors. In addition, the following may be taken into consideration when assessing the feasibility of alternatives: site suitability; economic viability; availability of infrastructure; general plan consistency; other plans or regulatory limitations; jurisdictional boundaries; and the ability of the proponent to attain site control. CEQA Guidelines Section 15126.6(f)(2)(B) describes that if the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR.

The description or evaluation of alternatives does not need to be exhaustive, and an EIR need not consider alternatives for which the effects cannot be reasonably determined and for which implementation is remote or speculative. Pursuant to CEQA Guidelines Section 15126.6(d), an EIR need not describe or evaluate the environmental effects of alternatives in the same level of detail as the proposed project, but must include enough information to allow meaningful evaluation, analysis, and comparison with the proposed project.

6.2 REASONABLE RANGE OF ALTERNATIVES

This section describes the selection of the reasonable range of alternatives for consideration in this EIR. As stated above, the selection of alternatives to the proposed project depends on whether the possible alternative can feasibly meet most of the basic objectives of the project and avoid or substantially lessen any significant impacts of the project. This section also identifies the alternatives that were considered but were rejected as infeasible during the EIR scoping period.

6.2.1 PROJECT OBJECTIVES

As described in Chapter 3, Project Description, of this Draft EIR, the primary purpose of the proposed LRDP Update is to set forth a framework for future development on UC Berkeley properties, while the primary purpose of Housing Projects #1 and #2 is to provide housing and campus life facilities for students and faculty. A complete list of project objectives is provided in Section 6.7.2, Objectives Comparison Summary.

6.2.2 SIGNIFICANT AND UNAVOIDABLE IMPACTS

While actions from the proposed project and mitigation measures, where feasible, would reduce the level of impact to less than significant, the following impacts would remain significant and unavoidable after mitigation measures are applied, as detailed in Chapters 5.1 through 5.18 of this Draft EIR:

- **Air Quality**
 - **Impact AIR-1:** Student population growth is greater than forecast in the current LRDP, potentially conflicting with the assumptions in the 2017 Clean Air Plan.
 - **Impact AIR-2.1:** Construction activities associated with the proposed LRDP Update could generate fugitive dust and construction equipment exhaust that exceed the Bay Area Air Quality Management District average daily construction thresholds.
 - **Impact AIR-2.2:** Buildout of the proposed LRDP Update would result in a substantial increase in ROG emissions from use of consumer products and repainting building at UC Berkeley that would contribute to the ozone nonattainment designations of the San Francisco Bay Area Air Basin (project and cumulative).
 - **Impact AIR-3:** Construction activities associated with potential future development projects accommodated under the proposed LRDP Update could expose nearby receptors to substantial concentrations of toxic air contaminants.
- **Cultural Resources**
 - **Impact CUL-1.1:** Future development under the proposed LRDP Update has the potential to permanently impact historic resources by demolishing or renovating historic buildings in a manner that is not in conformance with the Secretary of the Interior's Standards for Rehabilitation.
 - **Impact CUL-1.2:** Housing Project #1 would demolish the University Garage (1952 Oxford Street), a designated City of Berkeley Historical Landmark and eligible for listing in the California Register, which would result in a substantial adverse change to a historic resource.

- **Impact CUL-1.3:** Housing Project #2 would demolish and reconfigure People's Park, a designated City of Berkeley Historical Landmark, which would result in a substantial adverse change to a historic resource.
- **Impact CUL-1.5:** The design of Housing Project #2 may impair the integrity of one or more of the 10 historical resources in the immediate vicinity of People's Park through incompatible design.
- **Impact CUL-4:** The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in significant cumulative impacts with respect to cultural resources.
- **Noise**
 - **Impact NOI-1:** Noise from construction equipment could expose sensitive receptors to noise that exceeds the thresholds of significance.
 - **Impact NOI-3:** The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to construction noise.
- **Public Services**
 - **Impact PS-5:** Student population growth contributed to Berkeley Unified School District from construction of housing under the LRDP Update that could support families has the potential to result in the need for new or modified school facilities, the construction of which could result in environmental impacts.
 - **Impact PS-6:** Student population growth contributed to Berkeley Unified School District from construction of housing under the LRDP Update, in combination with past, present, and reasonably foreseeable projects, has the potential to result in the need for new or modified school facilities, the construction of which could result in environmental impacts.
- **Transportation**
 - **Impact TRAN-3:** New buildings and structures that are 100 feet or more in height, based on final exterior design, could create wind hazards at the pedestrian (ground) level.
 - **Impact TRAN-5:** The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to wind hazards at the pedestrian (ground) level.
- **Wildfire**
 - **Impact WF-2:** Development under the proposed LRDP Update could include an increase in academic life space, utility infrastructure upgrades, and energy resilience projects within the Hill Campus East, which is in a Very High FHSZ and has steep terrain and heavy vegetation. Development within this area could exacerbate wildfire risks.
 - **Impact WF-3:** The proposed LRDP Update could involve the installation or maintenance of infrastructure such as roads, fuel breaks, emergency water sources, power lines, or other utilities associated with potential development within the Very High FHSZ, including with the potential addition of a solar array installation in the Hill Campus East. Construction and operation of these

improvements could exacerbate fire risk through construction and maintenance activities and/or through the introduction of additional electrical infrastructure.

- **Impact WF-4:** The proposed LRDP Update could involve development within the Hill Campus East, which is in a Very High FHSZ, contains steep terrain, and is largely undeveloped, and which abuts existing residential areas. Therefore, potential development could expose people or structures to downslope landslides as a result of postfire slope instability.
- **Impact WF-5:** Potential development under the proposed LRDP Update could, in combination with other surrounding and future projects in the SRA or Very High FHSZ, result in cumulative impacts associated with the exposure of project occupants to pollutant concentrations from a wildfire or uncontrolled spread of a wildfire due to slope, prevailing winds, or other factors; the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or exposure of people or structures to significant risks including downslope landslides as a result of postfire slope instability.

6.2.3 ALTERNATIVES CONSIDERED AND REJECTED AS BEING INFEASIBLE

As described above, Section 15126.6(c) of the State CEQA Guidelines requires EIRs to identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process, and briefly explain the reasons underlying the lead agency's determination. Section 15126.6(c) provides that among the factors that may be used to eliminate alternatives from detailed consideration in the EIR are (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts. The following is a discussion of alternatives considered and rejected, along with the reasons it was not included in the analysis.

6.2.3.1 REDUCED GRADUATE PROGRAM AND RESEARCH ALTERNATIVE

This potential alternative considers a reduction or cap student enrollment as a means of reducing environmental impacts from UC Berkeley growth. As described in the EIR, annual undergraduate enrollment targets for each university in the UC system are established to ensure UC is meeting commitments to the State, as required in the State of California Education Code and identified in the California Master Plan for Higher Education. Thus, UC Berkeley has more control over its graduate student population and associated faculty, staff, housing, and facilities than it does its undergraduate numbers as a means to reduce student and campus headcount. As shown in Table 3.1, Proposed LRDP Update Buildout Projections, in Chapter 3, Project Description of this Draft EIR, graduate students constitute 40 percent of the projected increase in total student enrollment under the LRDP Update (3,424 graduate students out of 8492 total students). Therefore, UC Berkeley could potentially limit its graduate student enrollment and reduce or eliminate graduate programs, professional schools, academic research functions, and policy institutes, as well as associated faculty, staff, housing, and facilities. However, graduate students are vital elements of UC Berkeley's research endeavors and teaching resources; in any given semester, approximately 2,000 graduate student instructors work with UC Berkeley students in studios, laboratories, and discussion sections. Reducing or eliminating UC Berkeley's graduate and professional schools or academic research and policy institutes would conflict with the proposed LRDP Update's project objective of maintaining, supporting, and

enhancing UC Berkeley's status as an internationally renowned public research-intensive institution and center for scientific and academic advancement. Therefore, this alternative was considered but rejected because it would not meet a core project objective. Accordingly, Alternatives B, C, and D discussed below assume that the projected increase in student enrollment would remain the same under each alternative as projected in the proposed LRDP Update.

6.2.3.2 HISTORIC RESOURCES AVOIDANCE ALTERNATIVE

As described in Section 6.2.2, Significant and Unavoidable Impacts, implementation of the proposed LRDP Update has the potential to permanently impact historic resources by demolishing or redesigning historic buildings in a manner that is not in conformance with the Secretary of the Interior's Standards for Rehabilitation, resulting in significant and unavoidable impacts to historic resources. UC Berkeley considered developing an alternative that would allow implementation of the proposed LRDP Update, while avoiding impacts to historic resources by directing future development on sites without historic resource value, including vacant sites. Chapter 5.4, Cultural Resources of this Draft EIR, listed 20 designated historic resource properties, six properties listed as eligible for listing, and an additional 15 properties as potentially eligible. Given the large number of resources, or potential resources which are located throughout the EIR Study Area it was concluded that it would be infeasible to accommodate the LRDP Update development program without potentially affecting historic resources either directly through renovation or redevelopment of historic resource properties, or through development on vacant sites where the potential to affect an historic district exists. In addition, Housing Projects #1 and #2 could not be developed under this alternative, as both projects were found to result in significant and unavoidable impacts to historic resources.

Therefore, this alternative was not evaluated in the Draft EIR.

6.2.3.3 HOUSING PROJECTS #1 AND #2 ALTERNATIVES

As described in Section 6.2.2, Significant and Unavoidable Impacts, the construction of Housing Projects #1 and #2 would result in significant and unavoidable cultural resource impacts at their current locations. To avoid these impacts, UC Berkeley considered the following two alternatives for the two housing projects, and ultimately determined that preservation or partial preservation alternatives or alternate sites for both projects was infeasible as further described herein.

Housing Projects #1 and #2 Alternate Locations

Housing Project #1 includes development of a 526,000-square-foot building housing 770 beds and 46 employees. Housing Project #2 includes development of 529,970 square feet in two buildings that would house 1,179 student beds, 8 faculty/staff beds, 125 affordable and supportive housing residents, and 57 employees. When accounting for the combined number of beds (excluding the affordable and supportive housing beds on Housing Project #2), these two projects represent about 17 percent of the planned residential beds proposed under the LRDP Update, as shown in Table 3-1, Proposed LRDP Update Buildout Projections, in Chapter 3, Project Description of this Draft EIR. Locating Housing Projects #1 and #2 on other UC Berkeley properties in the City Environs Properties or the Clark Kerr Campus that are designated

for future student housing could reduce the total projected number of beds within the proposed LRDP Update development program, as described in Section 3.5.1.7, Development Program, in Chapter 3, Project Description, or could require UC Berkeley to identify additional housing sites that are not currently UC Berkeley properties for housing.

Development of Housing Projects #1 and #2 at one or more alternative sites would be constrained by site access and parcel size, as many of the eligible sites are smaller than the proposed development sites. Therefore, the development programs would need to either be reduced, or the housing projects would require multiple sites, further diminishing the total number of beds described in the proposed LRDP development program.

While a potential alternate site alternative would reduce the significant historic resource impacts at both sites, they would also have the potential to introduce new historic resource impacts at many of the sites in the City Environs Properties and the Clark Kerr Campus, as both contain historic resources or are adjacent to such resources.

For these reasons, the potential off site location alternative for Housing Projects #1 and #2 was not evaluated in the Draft EIR.

Housing Projects #1 and #1 Preservation or Partial Preservation

As described above in Section 6.2.2, Significant and Unavoidable Impacts, the construction of Housing Projects #1 would result in significant and unavoidable cultural resource impacts to the University Garage (1952 Oxford Street). Preservation of the University Garage intact on the project site would significantly reduce the developable footprint of Housing Project #1 and correspondingly significantly reduce the 770 beds planned for the site, and preclude the development of an architecturally distinctive building with open and common spaces, thereby failing to meet the project objectives. A partial preservation alternative of maintaining a portion of the façade of the University Garage would not lessen or mitigate the impact on the University Garage because the retention of only a portion of the structure would not convey its significance, and thus similarly result in significant and unavoidable impacts on an historic resource.

As also described in Section 6.2.2 above, construction of Housing Project #2 would result in significant and unavoidable cultural resource impacts to People's Park resulting from the demolition and reconfiguration of the site. Given that the primary character defining feature of the site is the landscape, supported by the restroom building, stage and basketball courts, it is not feasible to fully or partially preserve the park and construct Housing Project #2. As shown on Table 3-7 in Chapter 3, Project Description of this Draft EIR, Housing Project #2 would retain 82,000 square feet of open space area, which is 67 percent of the project site. Even with the partial preservation of open space area, the integrity of the resource would not be lessened or mitigated, resulting in significant and unavoidable impacts.

For these reasons, both a preservation and partial preservation alternative for Housing Project #1 and #2 were considered but rejected.

6.2.3.4 INCREASED TRANSPORTATION DEMAND MANAGEMENT MEASURES

A transportation demand management (TDM) program is a set of policies and programs that include incentives, information and education to encourage employees to commute to work by modes other than driving alone, in order to reduce single occupancy auto trips and resulting, greenhouse gas (GHG) emissions. As described in Chapter 5.15, Transportation of this Draft EIR, UC Berkeley's TDM program is based on the *UC Berkeley TDM Strategic Plan* which includes eleven program elements that emphasize alternative commuting options including public transit pass subsidies, biking, walking, carpooling, and car sharing. In addition, UC Berkeley is strengthening its commitment to reduce VMT through implementation of modified CBPs that would facilitate bicycle use, limit the availability of day parking passes, and expand information programs on alternative travel modes.

As part of this EIR alternatives analysis, UC Berkeley considered a project alternative that would include additional TDM measures, including increased funding for additional and new transit service, long haul shuttles and local capital improvement projects including bicycle lane gap closures, and improvements to Telegraph Avenue. In reviewing the feasibility of these broader measures, UC Berkeley determined that the additional costs of these measures would be high relative to the additional benefit gained when compared to the ongoing costs and benefits of implementing the current TDM program. In addition, the LRDP Update includes an objective that focuses on partnering with the City of Berkeley on capital improvement projects that provide multi-modal connections between the city and UC Berkeley, which would achieve many of the same benefits of the broader TDM measures at a more reasonable cost through shared funding with the city. Therefore, UC Berkeley considered this alternative infeasible due to economic factors and it was not evaluated in the Draft EIR.

6.2.4 SELECTED ALTERNATIVES

In accordance with the CEQA Guidelines, the project alternatives and the comparative merits of the alternatives are discussed below. All the potential environmental impacts associated with adoption and implementation of the proposed project were found to be either less than significant without mitigation or less than significant with mitigation, with the exception of some impacts associated with air quality, cultural resources, noise and wildfire, which were found to be significant and unavoidable with mitigation measures. The alternatives were selected because of their potential to further reduce and avoid these impacts. The alternatives to be analyzed in comparison to the proposed project are summarized below, including buildout metrics, which are also listed in Table 6-1, Forecasted Net Growth Comparison of the Proposed Project and Alternatives to the Proposed Project, in Section 6.2.5, Assumptions and Methodology:

- **Alternative A: No Project:** This alternative would involve the continued implementation of the current LRDP. Planned growth as expressed in the current LRDP would continue up to its planned capacity, which could result in up to 1,530 additional beds, and 2,476,929 square feet of academic life and campus life space. Alternative A would not include development of Housing Projects #1 or #2, and these sites would remain as is under existing conditions.
- **Alternative B: Reduced Development Program:** Under this alternative, UC Berkeley would implement an LRDP with a 25 percent reduction in undergraduate beds and academic square footage from that analyzed under the proposed LRDP Update. Under this alternative, housing for approximately 6,756

undergraduate students and 1,713,441 square feet of new academic space would be provided, compared to 9,008 undergraduate student beds and 2,284,588 square feet of new academic space under the proposed LRDP Update. In total, Alternative B would provide 9,479 net new beds (6,756 undergraduate + 2,065 graduate + 549 faculty staff + 109 non-university). Housing Project #1 would provide housing for approximately 578 students (compared to 770 students under the proposed LRDP Update) and Housing Project #2 would provide housing for up to 885 students (compared to 1,179 students under the proposed LRDP Update). In total, Housing Project #2 would provide 1,018 beds (885 undergraduate + 8 faculty/staff + 125 affordable and supportive).

- **Alternative C: Reduced Vehicle Miles Traveled:** This alternative would incorporate additional project features to reduce VMT and corresponding GHG emissions. Additional project features include incorporating more remote learning and working opportunities, reducing parking on campus (no net new parking spaces through the EIR horizon year 2036-37), and increasing faculty and staff beds by 500 for a total of 12,231 beds for students, faculty, and staff.
- **Alternative D: Increased Faculty and Staff Housing:** This alternative would add an additional 1,000 beds for faculty and staff housing in the Hill Campus East and the Clark Kerr Campus areas. The proposed LRDP Update buildout projections would remain the same in this alternative, with the exception of the additional beds. Therefore, this alternative would provide 1,549 net new faculty/staff beds for a total of 12,731 net new beds.

6.2.5 ASSUMPTIONS AND METHODOLOGY

The alternatives analysis is presented as a comparative analysis to the proposed project. The development intensity for the alternatives varies from the proposed project. The estimated net new growth under each alternative, as well as the proposed project, is provided in Table 6-1, Forecasted Net Growth Comparison of the Proposed Project and Alternatives to the Proposed Project.

The alternatives analysis assumes that all applicable mitigation measures recommended for the proposed project would also apply to any potentially significant environmental impacts of each alternative, except for the No Project Alternative. The following analysis compares the potentially significant environmental impacts of the four alternatives with those of the proposed project for each of the environmental topics analyzed in Chapter 5, Environmental Analysis, of this Draft EIR. A summary of the alternatives analysis conclusions is provided in Section 6.7, Environmentally Superior Alternative of this Chapter.

TABLE 6-1 FORECASTED NET GROWTH COMPARISON OF THE PROPOSED PROJECT AND ALTERNATIVES TO THE PROPOSED PROJECT

Category	Proposed Project	Alternative A: No Project	Alternative B: Reduced Development Program	Alternative C: Reduced Vehicle Miles Traveled	Alternative D: Increased Faculty and Staff Housing
LRDP Update					
Residential Beds					
Hill Campus West	0	0	0	0	0
Hill Campus East	0	0	0	0	600
Clark Kerr Campus	2,364	0	1,772	2,614	2,764
City Environs Properties	9,367	1,530	7,707	9,617	9,367
Total Residential Beds ^a	11,731	1,530	9,479	12,231	12,731
Academic Life Square Feet	2,284,588	2,476,929 ^b	1,713,441	2,284,588	2,284,588
Campus Life Square Feet	906,539		906,539	906,539	906,539
Student Population ^c	8,492	8,492 ^d	8,492	8,492	8,492
Employees	3,579 ^e	3,579 ^d	3,579	3,579	3,579
Parking Spaces ^f	1,240	3,650	1,240	0	1,240
Housing Project #1					
Residential Beds	770	16	578	770	770
Population	770	16	578	770	770
Employees	46	10	46	46	46
Parking	21	0	21	21	21
Housing Project #2					
Residential Beds	1,312	0	1,018	1,312	1,312
Population	1,312	0	1,018	1,312	1,312
Employees	57	0	57	57	57
Parking	11	0	11	11	11

Note:

a. Includes residential beds listed under Housing Project #1 and Housing Project #2.

b. Because the 2020 LRDP EIR did not differentiate between academic and campus life square footage, these numbers are combined under this alternative.

c. Population includes 5,068 undergraduate students and 3,424 graduate students. The LRDP does not mandate or commit UC Berkeley to any specific level of student enrollment. The actual undergraduate population is mandated by State of California and is therefore assumed to be the same for all the alternatives.

d. The remaining projected population in the current LRDP is a negative 5,689 students and 389 employees. As stated in note "c" above, the undergraduate student population is mandated by the State and not individual UC system campuses. Therefore, the "projected" number of students and employees for buildout year 2036-37 would be the same for all the alternatives. In other words, the No Project Alternative does not assume that no new students or only 389 employees, which are based in part on student population, would be assigned to UC Berkeley.

e. Employees are made up of both faculty and staff.

f. Includes parking spaces listed under Housing Project #1 and Housing Project #2.

Source: UC Berkeley, PlaceWorks, 2020.

6.3 ALTERNATIVE A: NO PROJECT

6.3.1 DESCRIPTION

Pursuant to CEQA Guidelines Section 15126.6(e)(1), the No Project Alternative is required as part of the “reasonable range of alternatives” to allow decision makers to compare the impacts of approving the proposed project with the impacts of taking no action or not approving the proposed project. Consistent with CEQA Guidelines Section 15126.6(e)(3)(A), when the project is the revision of a plan, as is the case with the LRDP Update, the No Project Alternative will be the continuation of the existing plan. Consistent with CEQA Guidelines Section 15126.6(e)(3)(B), when the project is a development project on an identifiable property, as is the case with Housing Projects #1 and #2, the No Project Alternative will be the circumstance under which the project does not proceed. Pursuant to CEQA Guidelines Section 15126.6(e)(3)(C), the Board of Regents of the University of California (the Regents), acting as the lead agency, should analyze the impacts of the No Project Alternative by projecting what would reasonably be expected to occur in the foreseeable future if the proposed project were not approved, based on current plans and consistent with available infrastructure and services.

This section describes the No Project Alternative as Alternative A. Alternative A would involve the continued implementation of the current LRDP, and continued adherence to UC Sustainable Practices Policy, Carbon Neutrality Initiative, and Seismic Safety policy. Planned growth as expressed in the existing LRDP would continue up to its planned capacity, which, as shown in Table 6-2, Forecasted Net Growth Comparison of the Proposed Project and Alternative A, would result in increases in residential beds (1,530), academic life and campus life space (up to an additional 2,476,929 square feet). There would be no changes to parking. As described in Chapter 3, Project Description, of this Draft EIR, the LRDP Update would include goals and objectives focusing on improved wayfinding and connectivity, and enhanced sustainability and resiliency. While the proposed LRDP Update is not a major departure from the existing LRDP in terms of its underlying vision and fundamental growth concepts for fostering a positive campus experience and ensuring capital investment represents an optimal use of resources, Alternative A would not incorporate modified CBPs to further reduce vehicle miles traveled; upgrades to utility infrastructure; increased energy efficiency and sustainability practices; or the potential addition of renewable energy systems. No updates to the CBPs or goals and objectives that the LRDP Update would be included. This alternatives analysis also assumes that none of the applicable mitigation measures recommended for the proposed project (including Housing Projects #1 and #2) would apply to Alternative A.

TABLE 6-2 FORECASTED NET GROWTH COMPARISON OF THE PROPOSED PROJECT AND ALTERNATIVE A

Category	Proposed Project	Alternative A: No Project	Change between the Proposed Project and Alternative A
LRDP Update			
Residential Beds			
Hill Campus West	0	0	-
Hill Campus East	0	0	-
Clark Kerr Campus	2,364	0	2,364 fewer residential beds
City Environs Properties	9,367	1,530	7,837 fewer residential beds
Total Residential Beds ^a	11,731	1,530	10,200 fewer residential beds
Academic and Campus Life Square Feet ^b	3,191,127	2,476,929	714,198 fewer square feet
Student Population	8,492	8,492 ^c	-
Employees ^d	3,579	3,579 ^c	-
Parking Spaces ^e	1,240	3,650	2,410 more spaces
Housing Project #1			
Residential Beds	770	16	754 fewer residential beds
Population	770	16	754 fewer people
Employees	46	10	36 fewer employees
Parking	21	0	21 fewer parking spaces
Housing Project #2			
Residential Beds	1,312	0	1,312 fewer residential beds
Population	1,312	0	1,312 fewer people
Employees	57	0	57 fewer employees
Parking	11	0	11 fewer parking spaces

Notes:

a. Includes residential beds listed under Housing Project #1 and Housing Project #2.

b. Because the 2020 LRDP EIR did not differentiate between academic and campus life square footage, these numbers are combined under this alternative.

c. The remaining projected population in the current LRDP is a negative 5,689 students and 389 employees. The undergraduate student population is mandated by the State and not individual UC System campuses. Therefore, the “projected” number of students and employees for buildout year 2036-37 would be the same for all the alternatives.

d. Employees are made up of both faculty and staff.

e. Includes parking spaces listed under Housing Project #1 and Housing Project #2.

Source: UC Berkeley, PlaceWorks, 2020.

As described in Chapter 3, Project Description, of this Draft EIR, the LRDP is a document that provides planning capacity for potential population growth that may be needed to support future population levels on each UC system campus. Varying factors affect UC Berkeley population levels, and State policies require the UC System to enroll a proportion of California high school graduates eligible for admission to state universities. The LRDP itself does not set a maximum population limit or target. In addition, the buildout horizon year of the 2036-37 school year is only for the purposes of providing the basis for identifying the development needed to accommodate projected enrollment and UC Berkeley population growth through a defined period and evaluating the associated long-range environmental impacts in this EIR. As such, while the proposed LRDP Update is intended to accommodate changes in UC Berkeley population, UC Berkeley

does not control UC Berkeley population through implementation of its LRDP but rather the undergraduate student population is mandated by the State. Therefore, under the No Project Alternative, UC Berkeley population estimates would remain the same as under the proposed project, but without the accommodations in capital development (including student housing and related development) provided through the proposed LRDP Update.

Potential future development from implementation of Alternative A would not increase development potential in the EIR Study Area beyond what was considered in the current LRDP and analyzed in the associated EIR (State Clearinghouse No. 2003082131), but rather assumes the remaining development growth under the current LRDP, shown in Table 6-2, Forecasted Net Growth Comparison of the Proposed Project and Alternative A, would occur through the academic year 2036-37. As shown in Table 6-2, Alternative A would result in fewer residential beds for students and/or faculty and staff provided by UC Berkeley, and more parking spaces.

Alternative A would not include the development of Housing Projects #1 or #2, and these sites would remain in their current conditions. The existing buildings on the Housing Project #1 site would remain, including the historic Oxford Garage. The existing park and amenities on the Housing Project #2 site would also remain unchanged.

6.3.2 IMPACT ANALYSIS BY ENVIRONMENTAL TOPIC

The potential environmental impacts associated with Alternative A when compared to the proposed project are described herein.

6.3.2.1 AESTHETICS

As described in Chapter 5.1, Aesthetics, of this Draft EIR, the proposed project would not result in any significant impacts related to scenic vistas, scenic views, or light and glare with the exception of the installation of solar arrays. Mitigation Measure AES-3 would be required to reduce impacts pertaining to light and glare from future solar array projects to a less-than-significant level.

Like the proposed LRDP Update, most potential future development under Alternative A would be expected to occur in existing urban transit priority areas (TPA), where future development has the potential to be exempt from aesthetics review under California Public Resources Code (PRC) Section 21099. PRC Section 21099 states that, “Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site within a transit priority area shall not be considered significant impacts on the environment.” Potential future projects under Alternative A that meet these criteria would be exempt from aesthetics evaluation. For the Housing Projects #1 and #2 sites, while these sites are within a TPA and exempt from aesthetics evaluations, no new development would occur on these sites and as such no changes from existing conditions under Alternative A would occur.

Like the proposed LRDP Update, aesthetics impacts under Alternative A would pertain only to projects in the EIR Study Area that would not meet all the PRC Section 21099 criteria. This could include potential future development within the TPA that is not infill and/or does not support residential, mixed-use

residential, or employment-generating uses. This potential future development would have a lesser impact on scenic vistas than an undeveloped area or isolated parcel away from existing development.

Applicable future projects under both scenarios would be subject to UC Berkeley's design review for consistency with UC Berkeley's policies governing scenic quality as described in Section 5.1.1.1, Regulatory Framework, in Chapter 5.1, Aesthetics. Alternative A would continue to incorporate existing Continuing Best Practices (CBPs) and mitigation measures from the 2005 LRDP EIR pertaining to scenic quality and aesthetics but would not realize the updated CBPs AES-1, AES-3, AES-4, and AES-5 that would reduce impacts pertaining to scenic quality, or Mitigation Measure AES-3 that would reduce impacts pertaining to light and glare from future solar array projects, which are likely to occur under Alternative A. Therefore, the potential for impacts to scenic vistas or scenic views, or create substantial light and glare affecting day or nighttime views would be less when compared to the proposed project because overall development would be less.

While the proposed project would not result in significant impacts to aesthetics, because Alternative A would result in less development that would potentially obstruct views or otherwise result in impacts to visual resource impacts, overall aesthetics impacts under Alternative A would be *less* when compared to the proposed project.

6.3.2.2 AIR QUALITY

As described in Chapter 5.2, Air Quality, implementation of the proposed project would conflict with the 2017 Clean Air Plan because student population growth is greater than forecast in the current LRDP. The proposed LRDP Update includes Mitigation Measure AIR-1 that requires UC Berkeley to coordinate early with the Association of Bay Area Government/ Metropolitan Transportation Commission to ensure that the Bay Area Air Quality Management District's (BAAQMD) Clean Air Plan accounts for UC Berkeley-related population changes. Under Alternative A, because it is assumed even without an update to the current LRDP (No Project) the population growth would be the same under both scenarios, the conflict with the 2017 Clean Air Plan would remain, and the impacts under Alternative A would be *similar* when compared to the proposed LRDP Update. Under the proposed project, the two housing projects were found to be consistent with the 2017 Clean Air Plan and impacts were therefore less than significant. Although the two housing projects would not be constructed under Alternative A, the impact would be *similar* to the proposed project.

The proposed project would result in significant and unavoidable impacts during the construction phase at the program level even with implementation of updated CBPs AIR-2 and AIR-3 to reduce fugitive dust, fugitive emissions, emissions from nonessential idling, and nitrogen oxide (NO_x) emissions and implementation of Mitigation Measure AIR-2.1 that requires construction equipment that meets the United States Environmental Protection Agency Tier 4 emissions standards or higher for certain projects. This is because the site-specific details of future development are unknown, which would also apply to future construction under Alternative A. While Alternative A would not realize the benefits of updated CBPs AIR-2 and AIR-3 and Mitigation Measure 2.1, there would be less construction and therefore overall construction related fugitive dust and equipment emissions would be *less*. Construction period air quality impacts from the two housing projects were found to be less than significant with implementation of updated CBPs AIR-2

6. ALTERNATIVES TO THE PROPOSED PROJECT

and AIR-3 and Mitigation Measure AIR-2.1. Under Alternative A, no construction would occur on the two housing project sites. Accordingly, impacts from construction air quality pollutants would be *less* when compared to the proposed project.

Buildout of the proposed LRDP Update would generate a substantial increase in reactive organic gas (ROG) emissions that exceeds the BAAQMD regional significance thresholds. The increase in NO_x and particulate matter (PM₁₀, and PM_{2.5}) emissions would not exceed the BAAQMD significance thresholds. Internal combustion associated with motor vehicle usage is the major source of ROGs, but other sources of ROGs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The vast majority (99 percent) of the emissions increase is associated with ROGs are from consumer products and repainting buildings at the UC Berkeley campus. Faculty/staff commute VMT makes up the remaining 1 percent. As part of the proposed LRDP Update, UC Berkeley would continually implement Mitigation Measure AIR-2.2 which requires the use of low or zero-VOC paints. However, given the larger development program of the proposed project, emissions under Alternative A would be *less* than the proposed project as ROG emissions from consumer products would be *less*. A. Under Alternative A, less infill housing would result in higher VMT rates from longer trip lengths resulting in higher VMT-related emissions compared to the proposed project. Operational impacts from the two housing projects would not exceed the thresholds for the release of air pollutants. Under Alternative A, no housing would be built on the two housing sites; thus, emissions from building operation would be *less*. However, as noted above VMT rates would be higher by not constructing infill housing near the UC Berkeley campus. Therefore, while impacts from increased VMT emissions, from not constructing the two housing sites would be *greater* under Alternative A, ROG emissions would be *less* when compared to the proposed project.

Under the proposed project, site specific details of future construction are unknown. Consequently, potential health risks to sensitive receptors during construction were found to be significant and unavoidable at the program level even with application of Mitigation Measure AIR-3 that requires construction health risk assessments for certain projects and CBP AIR-3 that requires control measures to reduce emissions of diesel particulate matter and ozone precursors from construction equipment exhaust. Future development under Alternative A would result in similar significant health risk impacts to sensitive receptors, however, overall impacts would be *lower* as less construction would occur. Construction of the two housing projects were found to result in less than significant health risk impacts with implementation of mitigation measures and CBPs. Because Housing Projects #1 and #2 would not be constructed under Alternative A, health risk impacts would be *less* when compared to the proposed project.

The proposed project would pose no operational community risks or hazards, including carbon monoxide (CO) hotspots, and would not generate any substantial odors. Because less development would occur under Alternative A, impacts from operational health risks and substantial odors are assumed to be *less* when compared to the proposed project.

Alternative A would result in less construction, and therefore lower emissions from reduced fugitive dust, fugitive emissions, emissions from nonessential idling, nitrogen oxide (NO_x) emissions, and ROG emissions associated with consumer products and building coatings. However, the proposed LRDP Update would include updated CBPs and Mitigation Measures that introduce new efforts to reduce criteria air pollutants

that would not be implemented under Alternative A. However, overall, air quality impacts are considered to be *less* under Alternative A when compared to the proposed project because overall construction would be less and ROG emissions, from consumer products, which account for 99 percent of the projected emissions would be less.

6.3.2.3 BIOLOGICAL RESOURCES

As discussed in Chapter 5.4, Biological Resources, of this Draft EIR, the impacts to biological resources from the proposed project are fully mitigable with implementation of updated CBPs BIO-1 through BIO-8, and CBP BIO-11, existing CBPs BIO-9 and BIO-10, and Mitigation Measure BIO-4. The proposed project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; it would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan; nor would it, in combination with past, present, and reasonably foreseeable projects, result in cumulative impacts with respect to biological resources.

The proposed project would introduce taller buildings in the EIR Study Area to increase densification and more effectively utilize UC Berkeley properties to accommodate a larger UC Berkeley population, which would increase the potential for bird strike impacts and impacts to nesting birds. Under Alternative A, the potential for bird strikes and impacts to nesting birds and roosting bats from construction would be lower, given the smaller development program, and lower building heights compared to the proposed project. However, new buildings under Alternative A would not realize the benefits of Mitigation Measures BIO-4 to reduce impacts to bird strikes to less-than-significant levels. Therefore, impacts to bird strike would be *greater* under Alternative A when compared to the proposed project.

Redevelopment of the highly urbanized Housing Project #1 site would not result in biological resource impacts. Compliance with CBP BIO-1 and CBP BIO-2 reduce potential impacts to migratory birds and roosting bats should any occupy the site before the project construction begins. Potential impacts related to bird strike would be mitigated with implementation of Mitigation Measure BIO-4. Under Alternative A, existing conditions on-site would not change, and there would be no increased risk of bird collision or impacts to nesting birds; thus, the impact would be *less* when compared to the proposed project.

The site for Housing Project #2 is currently open space with habitat-supporting vegetation. Compliance with CBP BIO-1 and CBP BIO-2 reduce potential impacts to migratory birds and roosting bats. Potential impacts related to bird strike would be mitigated with implementation of Mitigation Measure BIO-4. Under Alternative A, existing conditions on-site would not change, and these impacts to biological resources due to construction of new buildings would not occur.

Because overall development under Alternative A would be less than that of the proposed project, resulting in less potential for impacts to biological resources, impacts to biological resources from potential future development as allowed under Alternative A would be *less* when compared to the proposed project.

6.3.2.4 CULTURAL RESOURCES

As described in Chapter 5.4, Cultural Resources, of this Draft EIR, the proposed project would result in significant and unavoidable impacts, due to the potential of impacts on historic resources under the proposed LRDP Update as well as Housing Projects #1 and #2, even with implementation of updated CBP CUL-1, and Mitigation Measures CUL-1.1a through CUL-1.1b, and CUL-2.

Under Alternative A, new development would continue throughout the UC Berkeley campus up to the extent allowed under the existing LRDP, which would be *less* when compared to the proposed project. In addition, Housing Projects #1 and #2, which would result in significant and unavoidable impacts to cultural resources, would not be constructed under Alternative A. Therefore, the impacts would also be *less* when compared to the proposed project.

As described in Chapter 5.4, there are existing archaeological, architectural, and historical resources, and potentially unknown cultural resources, in the EIR Study Area as well as potentially unknown archaeological resources, that could all be impacted by new demolition, inappropriate modification, or inappropriate new construction under the proposed project or Alternative A. Like the proposed project, Alternative A would be subject to the procedures of conduct following the discovery of human remains set forth in California Health and Safety Code, Public Resources Code and the California Code of Regulations. Alternative A would not include the updated CBPs and mitigation measures included under the proposed project but would include similar measures from the existing LRDP EIR. However, because *less* development would occur under the Alternative A scenario, and Housing Projects #1 and #2 would not be included in Alternative A, the potential to impact cultural resources would be *less* when compared to the proposed project.

6.3.2.5 ENERGY

As described in Chapter 5.5, Energy, of this Draft EIR, the proposed project would not result in significant impacts related to energy efficiency or conflict with State or local plans for renewable energy or energy efficiency, and no mitigation measures are required. UC Berkeley campus energy infrastructure consists of several interconnected systems: electricity and natural gas provided by Pacific Gas and Electric Company (PG&E), and power to some sites provided by East Bay Community Energy (EBCE) and the University of California wholesale power program; on-site PV arrays; in-building chillers; a cogeneration plant on the Campus Park to produce steam and electricity that is powered by natural gas; and a steam plant on the Clark Kerr Campus. These conditions would be the same under both scenarios. However, the proposed project would upgrade the existing cogeneration plant on the Campus Park, resulting in an overall net increase in electricity demand, but with more efficient operations, and a net decrease in non-renewable natural gas use. The LRDP Update would also include upgrades to the existing electric network on the Campus Park, the Hill Campus West, and the Hill Campus East. Furthermore, there are several potential renewable energy systems being considered such as installation of a solar PV system (Battery Energy Storage System) on the Hill Campus East, use of biogas fuel cells, development of a geothermal energy system, and integration of a mechanical energy storage system. Because the improvements would not be realized under Alternative A, energy efficiency impacts would be *greater* when compared to the proposed project.

All development that occurs in the State is required to comply with best management practices regulated in the 2019 California Green Building Code and 2019 Building Energy Efficiency Standards, which ensure new development would not result in the wasteful or inefficient use of energy. Further, new development would automatically be enrolled in renewable energy supplied by EBCE. Such requirements and enrollment in EBCE would be required under both the proposed project and under Alternative A. Additionally, neither the proposed project nor Alternative A would introduce a level of development and population growth that would be anticipated to necessitate the construction of new energy supply facilities or transmission infrastructure.

Less development would occur under the Alternative A scenario (e.g., neither Housing Projects #1 nor #2 would be developed), so energy consumption from construction would be *less* when compared to the proposed project. Under the proposed project, while Housing Project #1 would be constructed to current energy efficient building codes, which would result in greater energy efficiency compared to the current buildings on the site, the size of the proposed building would require greater amounts of energy for lighting and ventilation operations. Similarly, while Housing Project #2 would also be constructed to current energy efficiency standards, the buildings would be constructed on undeveloped land resulting in an overall increase in energy consumption, compared to Alternative A. While more energy would be consumed when compared to the no new development scenario under Alternative A, the energy use from infill student housing near existing residential uses and the UC Berkeley campus would be more efficient under the proposed project than leaving the sites in their remaining condition. Therefore, energy impacts are assumed to be greater because the no project scenario under Alternative A is less energy efficient when compared to the proposed project. Ultimately, as described in the air quality discussion, energy use from VMT would be *greater* under Alternative A because less infill development in Priority Development Areas (PDAs) and Transit Priority Areas (TPAs) would occur when compared to the proposed project. This applies to the implementation of the proposed LRDP Update as well as locating up to a total of 2,082 beds on the combined sites for Housing Projects #1 and #2, which would not occur under Alternative A. Therefore, overall adverse impacts related to energy efficiency would be *greater* under Alternative A when compared to the proposed project.

6.3.2.6 GEOLOGY AND SOILS

As described in Chapter 5.6, Geology and Soils, of this Draft EIR, the proposed project would result in less-than-significant impacts related to geology and soils, with implementation of CBPs GEO-1 through GEO-10 and Mitigation Measure GEO-5.

Future development under both Alternative A and the proposed project, (including Housing Projects #1 and #2) would be subject to the same federal, State, and UC Berkeley regulations that address and prevent hazards associated with geology, soils, and seismicity, as described in Section 5.6.1.1, Regulatory Framework, of Chapter 5.6. Both the proposed project and the existing LRDP encourage development in urbanized settings where there is less likelihood for impacts from geologic hazards to occur. Although Alternative A would result in less overall development, compliance with existing regulations related to geologic and seismic safety would apply similarly to both future development under Alternative A and the proposed project. Therefore, Alternative A would result in *similar* impacts when compared to the proposed project.

6.3.2.7 GREENHOUSE GAS EMISSIONS

As described in Chapter 5.7, Greenhouse Gas Emissions, of this Draft EIR, the proposed project would result in a less-than-significant impact at the program level because implementation of the proposed LRDP Update would result in a decrease in GHG emissions at buildout compared to existing conditions. Although future development under Alternative A would also be subject to the same technological improvements and regulatory standards, the substantially lower amount of student, faculty and staff beds under this alternative (1,530 beds compared to 11,731 beds) would reduce the potential for concentrated residential development in the PDA, TPA, and other areas surrounding the Campus Park. The lower amount of housing could result in increased, longer vehicle commute trips and corresponding VMT, which is a major source of GHG emissions. Therefore, impacts related to GHG emissions would be *greater* under Alternative A when compared to the proposed project.

No GHG emissions would be generated from energy use by Housing Projects #1 and #2 because new buildings would not utilize natural gas. All electricity for both projects would be procured from 100 percent renewable sources in accordance with UC Berkeley sustainability policies. As stated in Section 6.2.3.3, Housing Projects #1 and #2 Alternatives, above, the two housing projects comprise about 17 percent of the planned residential beds proposed under the LRDP Update. Housing Projects #1 and #2 would not be constructed under Alternative A, which could result in increased vehicle commute trips with corresponding increases in VMT and GHG emissions. Therefore, under Alternative A, overall GHG emissions would be greater than the proposed project.

Mitigation Measure GHG-2 identifies actions beyond the UC Sustainable Practices Policy and UC Berkeley Sustainability Plan that will achieve additional GHG reductions at UC Berkeley to ensure consistency with the State's long-term climate change goals under EO B-55-18. The mitigation also expands the UC's carbon neutrality commitments. Because Mitigation Measure GHG-2 will reduce Scope 3 GHG emissions resulting from implementation of the LRDP Update to 67 percent below 2018 emissions levels by 2036 and carbon neutral by 2045, the proposed project would not conflict with UC's Carbon Neutrality goals. Alternative A would not implement this mitigation measure and therefore, impacts would *greater* when compared to the proposed project.

Overall, impacts from GHG emissions under Alternative A would be *greater* when compared to the proposed project.

6.3.2.8 HAZARDS AND HAZARDOUS MATERIALS

As described in Chapter 5.8, Hazards and Hazardous Materials, of this Draft EIR, the proposed project would result in less-than-significant impacts related to hazards and hazardous materials, with no mitigation necessary. As discussed in Chapter 5.8 under impact discussion HAZ-4, there are sites within the EIR Study Area that are included on a list of hazardous materials sites. However, contamination at these sites has been fully characterized and remediated with local and regional agency oversight, with any potential residual contamination believed to pose no threat to human health and the environment. Implementation of CBPs HAZ-1 through HAZ-5 would ensure that UC Berkeley follows health and safety procedures and related programs to minimize any potential risks related to hazardous materials.

Under Alternative A, no development would occur on the sites for Housing Projects #1 and #2, therefore impacts would be *less* when compared to the proposed project.

Alternative A would occur as projected in the existing LRDP, which also required no mitigation for hazardous materials. The same CBPs apply under the existing LRDP, although the proposed project made minor changes to these measures to update them with existing practices. Those minor changes would not be realized in Alternative A.

The proposed project was found to have a less-than-significant impact related to the routine transport, use, or disposal of hazardous waste, the release of hazardous waste, or the release of hazardous emissions or handling of hazardous materials in the proximity of an existing or proposed school. As further discussed in Chapter 5.8, Hazards and Hazardous Materials, the EIR Study Area is not located within an airport land use plan area for which potential future development could conflict, and implementation of the proposed project would not conflict with an adopted emergency response plan or emergency evacuation plan. Potential future development that could occur in the EIR Study Area from implementation of the proposed project, including Housing Project #1 and Housing Project #2 would be required to comply with all federal, State, and UC Berkeley regulations and policies pertaining to hazards and hazardous materials. Development that would occur under Alternative A would be required to comply with the same regulations and policies which would reduce impacts related to hazardous materials. Therefore, Alternative A would have a *similar* impact when compared to the proposed project.

6.3.2.9 HYDROLOGY AND WATER QUALITY

As described in Chapter 5.9, Hydrology and Water Quality, of this Draft EIR, the proposed project would not result in any significant impacts related to hydrology and water quality and no mitigation measures are required. Compliance with existing regulations and procedures as well as CBP HYD-1, updated CBP HYD-2, CBPs HYD-3 and HYD-4, updated CBP HYD-5, and CBPs HYD-6 through HYD-13 would ensure that pre- and post-construction impacts to hydrology and water quality would be less than significant. These regulations and procedures would be maintained under Alternative A.

Although Alternative A would result in less development overall, future development would primarily occur within already urbanized areas and would connect to existing drainage systems already in place and be subject to the same existing federal, State, regional, and UC Berkeley regulations relating to hydrology and water quality, similar to the proposed project. Compliance with existing regulations would ensure that pre- and post-construction impacts to water quality would be minimized as future development occurs. Under Alternative A, no development would occur on the sites for Housing Projects #1 and #2, therefore impacts would be *less* when compared to the proposed project. Because compliance with these policies would be required under Alternative A, and Alternative A would not affect areas not analyzed under the LRDP Update, Alternative A would have *similar* impacts to hydrology and water quality when compared to the proposed project.

6.3.2.10 LAND USE AND PLANNING

As described in Chapter 5.10, Land Use and Planning, of this Draft EIR, the proposed project would not result in any significant impacts related to land use and planning and no mitigation measures are required. The proposed LRDP Update would implement CBP LU-1 to ensure potential future development would conform to the Physical Design Framework and updated CBP LU-2 to ensure that each individual project built in the Hill Campus West, Hill Campus East, or the City Environs Properties would be assessed to determine whether it could pose potential significant land use impacts not anticipated in the LRDP, and if so, the project would be subject to further evaluation under the California Environmental Quality Act (CEQA).

The proposed project would include development on existing UC Berkeley properties and would not create physical barriers within existing communities such as walls, highways, railroad tracks, airports, or similar development, nor would it remove existing means of access such as roads or bridges. Under Alternative A, development would also occur on existing UC Berkeley properties, and would also not propose physical features that could divide a community.

While Alternative A would not include any updates to land use policies, goals, or objectives that would occur under the LRDP Update, under Alternative A, development would continue to occur on UC Berkeley properties and would not conflict with already approved standards under the existing LRDP. The applicable area analyzed under the existing LRDP is similar to that of the proposed project. The existing LRDP includes the Campus Park, the Hill Campus East, Hill Campus West, and the Clark Kerr Campus, and includes the City Environs Properties within zones adjacent to the Campus Park. However, development under the existing LRDP only affects UC Berkeley-owned properties, and Alternative A, as previously described, would only allow for additional academic and campus life space under remaining allocations. Therefore, the properties potentially affected under Alternative A would remain the same.

As the LRDP serves as the primary campus land use plan, and as UC Berkeley is the only agency with land use jurisdiction over UC Berkeley projects, development under Alternative A would continue to implement the existing LRDP. Land use type would be similar as under the proposed project in supporting residential, academic life, and campus life space and would not result in conflicts with the existing mix of land uses within the UC Berkeley campus. Under Alternative A, no development would occur on the sites for Housing Projects #1 and #2, therefore impacts would be *less* when compared to the proposed project. As such, Alternative A would not cause a significant environmental impact due to conflicts with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Because Alternative A would not result in changes that would have more or less of an impact on creating physical barriers within existing communities or conflict with applicable land use policies, impacts to land use and planning under Alternative A would be *similar* to those under the proposed project.

6.3.2.11 NOISE

As described in Chapter 5.11, Noise, of this Draft EIR, the proposed project would result in a less-than-significant impact related to operational noise with implementation of CBP NOI-1. Impacts related to

vibration would also be less than significant with implementation of Mitigation Measure NOI-2. However, impacts related to construction noise would be significant and unavoidable even with implementation of CBP NOI-2 and NOI-3, and Mitigation Measure NOI-1. At the program level this is because of the unknown nature of the construction activities associated with future projects that may occur near noise-sensitive receptors with respect the project type, equipment list, time of day, phasing and overall construction duration. Significant and unavoidable impacts during construction were found for Housing Projects #1 and #2 because of the height of the nearby sensitive receptors and the infeasibility of constructing sound walls beyond the second story to mitigate the impact from construction equipment.

While UC Berkeley is not required to comply with local regulations and standards for noise, such as city codes, for the purposes of CEQA, UC Berkeley uses noise standards from the applicable municipal code in which the noise-sensitive receptor is located; therefore, potential future development from implementation of the proposed project would be subject to the standards of the Berkeley Municipal Code or the Oakland Municipal Code, depending on location. As specific uses are proposed for particular sites, project-level design, permitting, and/or environmental review would serve to ensure that individual uses would comply with the noise regulations. Future development under Alternative A would also be subject to these applicable standards. Because less construction would occur, noise and vibration from construction would be *less* under Alternative A when compared to the proposed project.

Alternative A would result in less development, including no new construction on the sites for Housing Projects #1 and #2, but would generate more VMT due to less infill housing, which is assumed to generate more noise from mobile sources when compared to the proposed project. While no project development on the sites for Housing Projects #1 and #2 would eliminate the significant and unavoidable short-term construction impacts, the increased noise impacts from the long-term operational phase would result in *greater* noise impacts under Alternative A when compared to the proposed project.

6.3.2.12 POPULATION AND HOUSING

As described in Chapter 5.12, Population and Housing, of this Draft EIR, with implementation of Mitigation Measure POP-1, (which establishes a population reporting protocol to support regional planning projections), impacts associated with indirect and direct population growth would be less than significant. On a project level, impacts related to regional population projections are less than significant for Housing Projects #1 and #2.

Also described in Chapter 5.12, the displacement of housing units could occur as UC Berkeley implements the proposed LRDP over the buildout horizon of the project. With the addition of Mitigation Measure POP-2 requiring compliance with the UC Relocation Policy. Impacts related to the displacement of a substantial number of people or housing were found to be less than significant at the project level for Housing Projects #1 and #2. Under Alternative A, no displacement would occur from Housing Project #1 and impacts would be *less* when compared to the proposed project. There is no housing on the site of Housing Project #2; therefore, impacts would be *similar* when compared to the proposed project.

Implementation of the proposed project focuses on infill development in PDAs and TPAs, which is in alignment with the regional planning framework of *Plan Bay Area*. Further, the LRDP Update serves as the

guiding policy document at UC Berkeley that plans for space to accommodate reasonably feasible population growth on the UC Berkeley campus.. Implementation of the proposed project would guide the development of an additional 10,200 beds on the UC Berkeley campus compared to the remaining 1,530 beds under Alternative A. Since campus population projections are the same under Alternative A and the proposed project this alternative would also exceed regional growth projections. However, Alternative A would not be subject to Mitigation Measure POP-1 that would ensure adequate planning occurs to accommodate the future population increase and future development to extended buildout year through 2036-37. Therefore, impacts under Alternative A would be *greater* when compared to those under the proposed project.

Alternative A would have the same population growth as the proposed project in the EIR Study Area through 2036-37 but would not include the additional 10,200 beds to accommodate the growth. Therefore, Alternative A would be dependent on non-UC Berkeley housing that is not on UC Berkeley property. No new housing would be developed on the sites for Housing Projects #1 and #2, therefore, given the same population growth as the proposed project, the lack of planning to accommodate this growth would result in greater impacts under Alternative A at the program and project-levels when compared to those of the proposed project.

In summary, because Alternative A would have the same population growth potential as the proposed project but would not include sufficient residential development to accommodate demand for residential growth nor implement a revised policy framework to guide the development, impacts related to population and housing would, overall, be *greater* when compared to the proposed project.

6.3.2.13 PUBLIC SERVICES

As described in Chapter 5.13, Public Services, of this Draft EIR, impacts under the proposed project to fire protection services, police services, and libraries were found to be less than significant. Impacts to the Berkeley Unified School District (BUSD) were found to be significant and unavoidable with implementation of Mitigation Measure PS-5 because the current capacity of the BUSD is unavailable and therefore unknown for the preparation of this evaluation. Housing Projects #1 and #2 do not generate housing that can accommodate families with school-aged children, thus, impacts to BUSD are less than significant.

Alternative A would have the same population growth as the proposed project, and therefore, would result in a similar increase in demand on public services as the proposed project. While the proposed project would include updated CBPs, Alternative A would incorporate the CBPs from the existing LRDP. These include the following:

- CBP PUB-1.1: UCPD would continue its partnership with the City of Berkeley police department to review service levels in the City Environs [Properties].
- CBP PUB-2.1-a: UC Berkeley would continue to comply with Title 19 of the California Code of Regulations, which mandates firebreaks of up to 100 feet around buildings or structures in, upon or adjoining any mountainous, forested, brush- or grass-covered lands.
- CBP PUB-2.1-b: UC Berkeley would continue on-going implementation of the Hill Area Fire Fuel Management program.

- CBP PUB-2.1-c: UC Berkeley would continue to plan and implement programs to reduce risk of wildland fires, including plan review and construction inspection programs that ensure that campus projects incorporate fire prevention measures.
- CBP PUB-2.3: UC Berkeley would continue its partnership with Lawrence Berkeley National Laboratory, Alameda County Fire Department, and the City of Berkeley to ensure adequate fire and emergency service levels to the campus and UC facilities.
- CBP PUB-2.4: To the extent feasible, for all projects in the City Environs Properties, UC Berkeley would include the undergrounding of surface utilities along project street frontages, in support of Berkeley General Plan Policy S-22.

Because the proposed project would not result in significant impacts to police services and Alternative A would have the same population growth, and because UC Berkeley would continue its partnership with the City of Berkeley Police Department to review service levels in the City Environs Properties under both scenarios, impacts to police services under Alternative A would be *similar* to the proposed project at the program level. No new development would occur on the sites for Housing Projects #1 and #2 and impacts would be *less* when compared to the proposed project at the project level.

As described in Chapter 5.13, Public Services, the proposed project increases demand on fire protection services from both the associated increased UC Berkeley population, and increased building densities and heights. Because Alternative A would result in less development than the proposed project, impacts on fire protection services at the program and project-level would be *less* as Housing Projects #1 and #2 would not be developed.

Alternative A would not be subject to Mitigation Measure PS-5 under the proposed project, which requires that UC Berkeley provide housing production projections to the BUSD to ensure accurate student enrollment projections from the BUSD. Even with mitigation, the impact was found to be significant and unavoidable due to unknown location and amount of housing to accommodate families and unknown capacity data from the BUSD. However, with about 87 percent fewer beds under Alternative A, and the likelihood that these beds would be constructed for undergraduate student housing, impacts under Alternative A would result in *less* impacts to school services.

The proposed project would not result in impacts to libraries, as UC Berkeley provides adequate library services to the UC Berkeley population, and the Berkeley Public Library has adequate capacity for increased population projections. Under Alternative A, there would not be a further increase in library demands, and therefore, Alternative A would result in *similar* impacts to library services.

While Housing Projects #1 and #2 would result in less-than-significant impacts to public services under the proposed project, they would increase building density and populations on-site under the proposed project. As Housing Projects #1 and #2 would not be developed under Alternative A, this would result in *less* impacts to public services under Alternative A.

Overall, while police and library services would have *similar* impacts under Alternative A when compared to the proposed project at the program level, because of *less* impacts to fire protection services and school

services, as well as *less* impacts from Housing Projects #1 and #2, impacts under Alternative A would be *less* when compared to the proposed project.

6.3.2.14 PARKS AND RECREATION

As described in Chapter 5.14, Parks and Recreation, of this Draft EIR, the proposed project would not result in significant impacts to parks and recreation facilities in the communities adjoining the UC Berkeley campus, as increased recreational demand from future development under the proposed LRDP Update would be met by existing and proposed UC Berkeley facilities. The proposed project would also not result in substantial adverse physical impacts associated with the provision of new or physically altered parks facilities; the need for new or physically altered parks facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for parks services, nor would it increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Alternative A would result in less overall development than the proposed LRDP Update, including campus life development that would potentially include additional recreational facilities. However, the same population growth potential as the proposed project would occur, resulting in a potentially *greater* strain on existing UC Berkeley and public parks and recreation facilities. This is because the additional campus life space with recreational facilities would not be developed under Alternative A to offset potential impacts to existing parks and recreational facilities.

Alternative A would also not include the development of Housing Projects #1 and #2. Under existing conditions, the site for Housing Project #1 contains no park or recreational space and the site for Housing Project #2 provides 2.8 acres of open space with recreational facilities. Under Alternative A, these conditions would remain unchanged. Under the proposed project, Housing Projects #1 and #2 each provide campus life space with recreational and open space facilities (i.e., indoor gyms, studios, rooftop gardens) to help offset the potential recreational demand on existing UC Berkeley and other public parks and recreation facilities. Additionally, Housing Project #2 would preserve 1.8 acres of the 2.8-acre site for continued use as public open space.

Under Alternative A, it is assumed that the same student population growth that would be accommodated in Housing Project #1 would still occur and require housing but would be in non-UC Berkeley housing with no additional campus life space with recreational and open space facilities to offset the demand on existing UC Berkeley and other public parks and recreation facilities. Overall, without the planned recreational and open space facilities provided by Housing Project #1, development under Alternative A result in *greater* demand and pressure on existing parks and recreational facilities.

Likewise, for Housing Project #2 under Alternative A, it is assumed that the same population growth would occur but would be in non-UC Berkeley housing with no additional campus life space with recreational and open space facilities to offset the demand to existing UC Berkeley and other public parks and recreation facilities. However, under Alternative A, the 2.8-acre park at Housing Project #2 would remain in its entirety

to continue to serve as a recreational use. Therefore, impacts would be *similar* under Alternative A for Housing Projects #2 when compared to the proposed project.

With less campus life development overall, Alternative A would potentially result in *less* recreational space in comparison to the proposed project which would add one acre of open space and three acres of formal athletic and recreational space. As described under impact discussion REC-1 in Chapter 5.14, UC Berkeley currently provides approximately 237 acres of indoor and outdoor recreational space, which translates to 4.3 acres per 1,000 residents for the current population of 55,129 students, staff, and faculty. While Alternative A could still result in an increase in recreational space, assuming the 237 acres remains unchanged for a conservative estimate, a UC Berkeley population of 67,200 by horizon academic year 2036-37, would result in 3.6 acres per 1,000 residents of recreational space.

While under both scenarios UC Berkeley would provide adequate parks and recreational facilities for the UC Berkeley population, and both scenarios would include the potential for recreational facilities, because less campus life space would be developed but the population growth would increase, impacts to parks and recreation under Alternative A would be *greater* when compared to the proposed project.

6.3.2.15 TRANSPORTATION

As described in Chapter 5.15, Transportation, of this Draft EIR, the proposed project would not conflict with a governing document/policy addressing the circulation system with implementation of Mitigation Measure TRAN-1 and updated CBP TRAN-1 and TRAN-3, and existing CBP TRAN-2 and TRAN-4. The proposed project would be consistent with CEQA Guidelines Section 15064.3(b) and no mitigation is required. Due to the increased the potential for buildings that are 100 feet or more, a pedestrian hazard from wind events could occur. Mitigation Measure TRAN-3 would require wind evaluation for these buildings once final exterior design is completed. This is a significant and unavoidable impact that can be reduced using building design refinements if feasible.

Under Alternative A, Housing Projects #1 and #2 would not be constructed and therefore impacts would be *less* when compared to the proposed project.

Conditions under Alternative A would be similar but would not include the expanded and enhanced goals, principles, and objectives of the proposed LRDP update that would improve the transportation system in the EIR Study Area designed to increase multi-modal transportation and enhance bicycle and pedestrian access and safety. As listed in Chapter 3, Project Description, of this Draft EIR, the proposed LRDP Update includes goals that would support expanding TDM programs and reducing single-occupant vehicle travel. Revised and enhanced objectives would prioritize pedestrian and bicycle travel and more sustainable and zero carbon transportation solutions. VMT-related impacts would be higher without transit proximate Housing Projects #1 and #2 but with the same population projection as the proposed project as commute trips (and corresponding VMT) would be higher. In addition, Mitigation Measure TRAN-3 required to reduce pedestrian hazards from potential wind events is also not included. For these reasons, impacts under Alternative A are assumed to be *greater* when compared to the proposed project.

6.3.2.16 TRIBAL CULTURAL RESOURCES

Under Alternative A, there would be less overall development within the EIR Study Area. As explained in Chapter 5.16, Tribal Cultural Resources, of this Draft EIR, there are no identified tribal known cultural resources (TCRs) that would be impacted by the proposed project. While there is the potential to uncover previously unknown TCRs during construction within the EIR Study Area, risks would be minimized by compliance with applicable regulations, updated CBP CUL-1 and Mitigation Measure TCR-1 to a less-than-significant level. Like the proposed project, development under Alternative A would be required to comply with applicable regulations as described in Chapter 5.16, such as the Native American Graves Protection and Repatriation Act, California Health and Safety Code, Senate Bill 18, and Assembly Bill 52. However, because less development would occur under the Alternative A scenario, the potential to impact TCRs would be *less* when compared to the proposed project. In addition, impacts from Housing Projects #1 and #2 would be *less* than the proposed project, since no development would occur on these sites under Alternative A. Overall, Alternative A would therefore have *less* impacts to tribal cultural resources in comparison to the proposed project.

6.3.2.17 UTILITIES AND SERVICE SYSTEMS

As described in Chapter 5.17, Utilities and Service Systems, of this Draft EIR, impacts to water, wastewater, stormwater, and electrical, natural gas, and telecommunications utility infrastructure under the proposed project were found to be less than significant with the ongoing implementation of CBP USS-1 through USS-8. No mitigation measures are required.

The proposed project would result in increased demands on these utilities. Demand and consumption trends generally demonstrate that advances in recycling and solid waste reduction requirements, water-efficient regulations in building and landscaping, and stricter stormwater retention requirements would reduce impacts from existing conditions even with increased development. However, it is assumed that because Alternative A would result in less overall development than the proposed project, it would result in less overall water demand, less wastewater and solid waste generation, and less energy and telecommunications demand from UC Berkeley buildings and the occupants of those buildings. Alternative A would still be required to comply with applicable regulations pertaining to stormwater, but would not include creek and watershed restoration projects, decentralized green infrastructure, and upgrades to UC Berkeley's storm drain system, which would reduce stormwater runoff. However, because of the reduced demand on water, wastewater, solid waste, and energy and telecommunications infrastructure, overall impacts on utilities and service systems from UC Berkeley buildings/occupants under Alternative A would be *less* when compared to the proposed project. However, because the population growth is assumed to be the same through the 2036-37 horizon year, impacts on demand from this growth to the service providers in the is assumed to be the *same* when compared to the proposed project.

In addition, because Housing Projects #1 and #2 would not be included in Alternative A, these would not result in increased demands on utility infrastructure from UC Berkeley buildings as they would under the proposed project. Therefore, impacts would be less in this regard. However, the population growth that would be accommodated on these two sites would likely still occur in the service providers service area and therefore the impacts overall would be *similar*.

While under the proposed project impacts on utilities and service systems at the program and project level would be less than significant, because overall demands from UC Berkeley buildings on utilities and service systems would be less under Alternative A, impacts would be less when compared to the proposed project.

6.3.2.18 WILDFIRE

As described in Chapter 5.18, Wildfire, of this Draft EIR, the proposed project would result in significant and unavoidable impacts, even with implementation of Mitigation Measures WF-2, WF-3, WF-4, and WF-5. This is conservative conclusion because the project-specific details of future potential development in the Hill Campus East are unknown at the project level and through applicable regulations and UC Berkeley CBPs, project-level impacts may be found to be less than significant. The proposed project would not substantially impair an adopted emergency response or emergency evacuation plan.

Under Alternative A, there would be less development within the EIR Study Area overall, with only an increase in academic life and campus life space up to the amounts specified in the existing LRDP (see Table 6-2, Forecasted Net Growth Comparison of the Proposed Project and Alternative A). Significant impacts related to wildfire would primarily be due to development within or near lands within the State Responsibility Area (SRA) or lands that are within a Very High Fire Hazard Severity Zone (VHFHSZ). Most of the potential future development that would occur under Alternative A, as with the proposed project, would be infill development in already urbanized areas, some of which are outside of the SRA or VHFHSZ. While development under Alternative A could occur in these areas, this alternative would not include infrastructure improvement projects or potential renewable energy projects within the Hill Campus East where there is heavy vegetation, steep terrain, and a high wildfire risk, that could increase wildfire risk, as described in Chapter 5.18 for the proposed project.

Alternative A would not incorporate Mitigation Measures WF-2, WF-3, WF-4, and WF-5, nor would it include CBP WF-4 which would require a Wildfire Management Plan for UC Berkeley development within the Very High FHSZ. However, Alternative A would include from the existing LRDP, CBP PUB-2.1-a, which requires compliance with Title 19 of the California Code of Regulations mandating firebreaks, and would be updated and renumbered as CBP WF-1 under the proposed project; and CBP PUB-2.1-c, which would require continuation of programs reducing wildland fire risks such as plan review and construction inspection to ensure projects incorporate fire prevention measures, and would be updated and renumbered as CBP WF-3 under the proposed project. CBP PUB-2.1-b from the existing LRDP requires ongoing implementation of the Hill Area Fire Fuel Management Program, which UC Berkeley is currently updating with the *Hill Campus Wildland Vegetative Fuel Management Plan*. The proposed project would update this CBP as WF-2 and refer to the updated *Hill Campus Wildland Vegetative Fuel Management Plan*. In addition, UC Berkeley would still be required to comply with applicable regulations pertaining to wildfire and fire safety, such as the California Building Code, California Fire Code, and California Public Resources Code, as well as UC Berkeley policies and plans such as its Emergency Preparedness Program, Emergency Operations Plan, and Campus Design Standards.

Wildfire related impacts from Housing Projects #1 and #2 would be less than significant. Since no new development would occur on these sites, impacts are assumed to be less when compared to the proposed project.

Because implementation of Alternative A would introduce *less* development overall within the SRA or Very High FHSZ, and in particular within the Hill Campus East, Alternative A would have *less* impacts pertaining to wildfire when compared to the proposed project.

6.3.3 RELATIONSHIP OF ALTERNATIVE A TO THE PROJECT OBJECTIVES

Under Alternative A, the proposed project would not be implemented, but student population growth would continue as under the proposed project throughout the 2036-37 academic year, resulting in the need for student housing and a limited increase in academic and campus life space. While in some cases this would result in the inability to accomplish any of the project objectives, some objectives would be met through on-going maintenance of natural areas and the Hill Campus open space, and some, though limited, increases in academic life and campus life space that could continue to occur under the no project alternative. For example, under the no project scenario, the Campus Park would continue to be maintained as the central location for classroom instruction and administrative and student life uses. UC Berkeley would continue to improve the existing campus life space, but not to the same degree as under the proposed project, which focuses new campus life space adjacent to the Campus Park, due to the reduced buildout capacity. Natural areas would continue to be maintained as natural and open spaces, but new open spaces proposed under the LRDP Update would not occur. New projects would continue to be planned to support the investment resources, meet space needs, and address deferred maintenance. UC Berkeley would also continue to maintain and enhance the image and experience of the UC Berkeley campus and support the continuing evolution of the UC Berkeley campus's notable and historic landscapes and architecture.

Other objectives pertaining to improvement of housing stock, enhancements in sustainability, mobility system improvements, minimization of private vehicle access and maximization of alternative modes of transportation, enhanced connectivity, and increased infrastructure and energy resiliency would not be accomplished under Alternative A.

Housing Projects #1 and #2 would not occur under Alternative A, and therefore this alternative would also not accomplish any of the objectives specific to these project components with the exception of the following objective for Housing Project #2 to "Preserve healthy, mature trees on the project site, to the greatest extent feasible", which would be consistent.

Overall, Alternative A would not accomplish most of the basic project objectives. See Section 6.7.2, Objectives Comparison Summary, for a complete listing of the project objectives and a comparison of the objectives by project alternative.

6.4 ALTERNATIVE B: REDUCED DEVELOPMENT PROGRAM

6.4.1 DESCRIPTION

Under Alternative B, the Reduced Development Program Alternative, UC Berkeley would implement the LRDP Update similar to that of the proposed project but with a 25 percent reduction in undergraduate beds and academic life space square footage. Table 6-3, Forecasted Net Growth Comparison of the Proposed Project and Alternative B, shows the difference between the net growth projections of the proposed project compared to Alternative B.

TABLE 6-3 FORECASTED NET GROWTH COMPARISON OF THE PROPOSED PROJECT AND ALTERNATIVE B

Category	Proposed Project	Alternative B: Reduced Development Program	Change between the Proposed Project and Alternative B
LRDP Update			
Residential Beds			
Hill Campus West	0	0	-
Hill Campus East	0	0	-
Clark Kerr Campus	2,364	1,772	592 fewer residential beds
City Environs Properties	9,367	7,707	1,660 fewer residential beds
Total Residential Beds ^a	11,731	9,479	2,252 fewer residential beds
Academic Life Square Feet	2,284,588	1,713,441	571,147 fewer academic life square feet
Campus Life Square Feet	906,539	906,539	-
Student Population	8,492	8,492 ^b	-
Employees ^c	3,579	3,579 ^b	-
Parking Spaces ^d	1,240	1,240	-
Housing Project #1			
Residential Beds	770	578	192 fewer residential beds
Population	770	578	192 fewer people
Employees	46	46	-
Parking	21	21	-
Housing Project #2			
Residential Beds	1,312	1,018	294 fewer residential beds
Population	1,312	1,018	294 fewer people
Employees	57	57	-
Parking	11	11	-

Notes:

a. Includes residential beds listed under Housing Project #1 and Housing Project #2.

b. The undergraduate student population is mandated by the State and not individual UC System campuses. Therefore, the “projected” number of students and employees, which are directly linked to the number of students, for buildout year 2036-37 would be the same for all the alternatives.

c. Employees are made up of both faculty and staff.

d. Includes parking spaces listed under Housing Project #1 and Housing Project #2.

Source: UC Berkeley, PlaceWorks, 2020.

Under Alternative B, development related to campus life space and parking would remain the same as under the proposed project. Potential new development, redevelopment, and renovation sites as listed in Chapter 3, Project Description, would remain with the potential for new development, redevelopment, or renovation, but the overall amount of development across the EIR Study Area would be decreased.

As shown in Table 6-3, Alternative B would result in fewer residential beds under both Housing Projects #1 and #2, accommodating less residents and employees on-site. Overall student and employee population projections would remain the same as the proposed project. While the general characteristics of Housing Projects #1 and #2 would remain similar to the proposed project, such as the incorporation of a variety of academic life space, campus life space, public uses, and open space, the overall development would be less intensive, as the amenity spaces would be reduced commensurately with the reduced number of beds, resulting in potentially smaller building footprints and/or heights.

The alternatives analysis assumes that all applicable mitigation measures recommended for the proposed project would apply to Alternative B.

6.4.2 IMPACT ANALYSIS BY ENVIRONMENTAL TOPIC

The potential environmental impacts associated with Alternative B when compared to the proposed project are described herein.

6.4.2.1 AESTHETICS

As described in Chapter 5.1, Aesthetics, of this Draft EIR, the proposed project would not result in any significant impacts related to scenic vistas, scenic views, or light and glare with the exception of the installation of solar arrays. Mitigation Measure AES-3 would be required to reduce impacts pertaining to light and glare from future solar array projects to a less-than-significant level.

Because the EIR Study Area where future development could occur is the same under both scenarios, potential future development under Alternative B that meets all the criteria of PRC Section 21099 would have the potential to be exempt from aesthetics evaluation and are not considered significant impacts on the environment. Like the proposed LRDP Update, aesthetics impacts under Alternative B would pertain only to projects in the EIR Study Area that would not meet all the PRC Section 21099 criteria. Similar to the proposed project, most development under Alternative B would still be expected to occur in existing urban areas primarily in the form of infill/intensification on sites either already developed and/or underutilized, where future development would have a lesser impact on scenic vistas when compared to development on an undeveloped area or isolated parcel away from existing development. In this way, aesthetic impacts are the same under both scenarios.

Development under Alternative B would result in a reduction in undergraduate beds and academic life space square footage compared to the proposed project, which would further reduce the potential for impacts on aesthetics by reducing the amount of development overall in comparison with the proposed project.

Similar views would continue to be visible between elements of the built environment and over lower-intensity areas under Alternative B. Under the proposed project, the LRDP Update includes the potential for development of buildings higher than existing conditions, which in some locations may have the potential to impact scenic views. However, many development projects within the EIR Study Area, including those at the Housing Projects #1 and #2 sites, would be exempt under CEQA from analysis of aesthetics impacts, and those that are not would be required to undergo further aesthetics evaluation review at the time a specific development project is proposed. The same would be true for development under Alternative B which would affect the same locations of the EIR Study Area but include less development overall.

Applicable future projects under both scenarios would be subject to UC Berkeley's design review for consistency with UC Berkeley's policies governing scenic quality as described in Section 5.1.1.1, Regulatory Framework, in Chapter 5.1, Aesthetics. Alternative B would also incorporate updated CBPs AES-1, AES-3, AES-4, AES-5 that would reduce impacts pertaining to scenic quality and Mitigation Measure AES-3 which would reduce impacts pertaining to light and glare from future solar array projects.

While the proposed project would not result in significant impacts to aesthetics, because Alternative B would result in less development overall that would potentially obstruct views or otherwise impact aesthetics, impacts to aesthetics under Alternative B would be *less* when compared to the proposed project.

6.4.2.2 AIR QUALITY

As described in Chapter 5.2, Air Quality, implementation of the proposed project would conflict with the 2017 Clean Air Plan because student population growth is greater than forecast in the current LRDP. The proposed LRDP Update includes Mitigation Measure AIR-1 that requires UC Berkeley to coordinate early with the Association of Bay Area Government/ Metropolitan Transportation Commission to ensure that the Bay Area Air Quality Management District's (BAAQMD) Clean Air Plan accounts for UC Berkeley-related population changes. Since population growth would be the same under both scenarios, the conflict with the 2017 Clean Air Plan would remain, and both projects would implement Mitigation Measure AIR-1, the impacts under Alternative B would be *similar* when compared to the proposed LRDP Update. Under the proposed project, the two housing projects were found to be consistent with the 2017 Clean Air Plan and impacts were therefore less than significant. Although under Alternative B, the size of Housing Projects #1 and #2 would be reduced, the impact related to plan consistency would be considered *similar* when compared to the proposed projects.

The proposed project would result in significant and unavoidable impacts during the construction phase at the program level even with implementation of updated CBPs AIR-2 and AIR-3 to reduce fugitive dust, fugitive emissions, emissions from nonessential idling, and nitrogen oxide (NO_x) emissions and implementation of Mitigation Measure AIR-2.1 that requires construction equipment that meets the United States Environmental Protection Agency Tier 4 emissions standards or higher for certain projects. This is because site specific details are unknown. Accordingly, impacts would be similar under both scenarios. However, with implementation of updated CBPs AIR-2 and AIR-3 and Mitigation Measure AIR-2.1, AIR-2.2, and AIR-3 construction air quality and health risk impact for Housing Projects #1 and #2 were found to be less than significant. Under Alternative B, there would be less development potential throughout the EIR Study

6. ALTERNATIVES TO THE PROPOSED PROJECT

Area including the two housing project sites. Accordingly, impacts from construction air quality pollutants would be *less* when compared to the proposed project.

Buildout of the proposed LRDP Update would generate a substantial increase in reactive organic gas (ROG) emissions that exceeds the BAAQMD regional significance thresholds. The increase in NO_x and particulate matter (PM₁₀, and PM_{2.5}) emissions would not exceed the BAAQMD significance thresholds. Internal combustion associated with motor vehicle usage is a major source of ROG, but other sources of ROG include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The vast majority (99 percent) of the emissions increase is associated with ROG from consumer products and repainting buildings at the UC Berkeley campus. Faculty/staff commute VMT makes up the remaining 1 percent. Under Alternative B, less infill housing would be provided resulting in *greater* VMT rates when compared to the proposed project. UC Berkeley would implement Mitigation Measure AIR-2, which require use of low or zero-ROG paints. This mitigation measure would be implemented under both scenarios. Therefore, because less construction would occur under Alternative B, impacts from ROG emissions are assumed to be *less* under Alternative B when compared to the proposed project. As described in Chapter 5.2, Air Quality, there are no measures available to reduce or regulate consumer products that release ROG. Because the number of beds would be reduced under Alternative B, impacts from ROG emissions are assumed to be *less* compared to the proposed project. Operational impacts from the two housing projects would not exceed the thresholds for the release of air pollutants. Under Alternative B, less housing would be built on the Housing Project #1 and #2 sites; thus, emissions from building operation would be *less*. However, the benefits from reducing VMT emissions by building more infill housing within walking distance to the UC Berkeley campus would be reduced. Thus, impacts from VMT emissions from the two housing sites would be *greater* under Alternative B when compared to the proposed project.

Under the proposed project, site specific details of future construction are unknown. Consequently, potential health risks to sensitive receptors during construction were found to be significant and unavoidable at the program level even with application of Mitigation Measure AIR-3 and CBP AIR-3. While the infill nature and proximity to receptors would be the same under both scenarios, less development would occur under Alternative B and therefore short-term construction health risks would be *less* when compared to the proposed project. The two housing projects would have less than significant impacts related to construction health risks to off-site receptors. Because the projects would involve less construction, impacts are assumed to be *less* under Alternative B when compared to the proposed project.

The proposed project would pose no operational community risks or hazards, including carbon monoxide (CO) hotspots, and would not generate any substantial odors. Because less development would occur under Alternative B, impacts from operational health risks and substantial odors is assumed to be *less* when compared to the proposed project.

Alternative B would result in less construction related emissions, and less operational (ROG) emissions as a result of less development. Although VMT rates could be higher as described above, with the decrease in ROG emissions, air quality impacts under Alternative B would be *less* when compared to the proposed project.

6.4.2.3 BIOLOGICAL RESOURCES

As discussed in Chapter 5.4, Biological Resources, of this Draft EIR, the impacts to biological resources from the proposed project are fully mitigable with implementation of updated CBPs BIO-1 through BIO-8, and CBP BIO-11, existing CBPs BIO-9 and BIO-10, and Mitigation Measure BIO-4. Potential future development under Alternative B would be the same as under the proposed project, but with less development for academic space and undergraduate housing. Under Alternative B, the fewer residential units and academic square footage would still be anticipated to occur in the form of infill/intensification on sites either already developed and/or underutilized, and/or in close proximity to existing development, where future development would have a *lesser* impact on biological resources. The same CBPs described in the proposed project would apply to Alternative B, and Alternative B would have the potential to impact the same parts of the EIR Study Area as under the proposed project. Alternative B would still allow for development throughout the EIR Study Area but result in less intensive development, and therefore result in *less* potential for impacts to biological resources.

Under Alternative B, Housing Projects #1 and #2 would still be developed, but with a 25 percent reduction. Housing Project #1 under the proposed project would have significant-but-mitigable impacts to biological resources where new buildings could increase the risk of bird collision unless appropriate design considerations are made. While buildings would potentially be lower in height because of the reduction in undergraduate housing under Alternative B, they would still likely result in *similar* risks regarding bird collisions and nesting birds related from construction. The same scenario would be true for Housing Project #2. In addition, while Housing Project #2 would also have a reduced capacity and therefore potentially smaller building footprints and/or heights, the project would still include much of the same components as the proposed project, such as academic life space, residential space, affordable and supportive housing, and open space. Impacts to biological resources from Housing Project #2 under Alternative B would therefore also be *similar* to that of the proposed project.

Development under Alternative B would be concentrated in the same urban areas, and the same measures to protect biological resources would be realized, however because development would be less intensive overall, it would potentially impact fewer sites than the proposed project, and therefore Alternative B would result in *less* impacts to biological resources when compared to the proposed project.

6.4.2.4 CULTURAL RESOURCES

As described in Chapter 5.4, Cultural Resources, of this Draft EIR, the proposed project would result in significant and unavoidable impacts, due to the potential of impacts on historic resources under the proposed LRDP Update as well as Housing Projects #1 and #2, even with implementation of updated CBP CUL-1, and Mitigation Measures CUL-1.1a through CUL-1.1b, and CUL-2.

Alternative B would include a similar development program as the proposed project, but with reduced overall development. Housing Projects #1 and #2 would still be included, but with reduced development programs as well. However, Housing Projects #1 and #2 would still result in the permanent removal or alteration of the existing historical resources at these sites to the extent that they would still result in significant and unavoidable impacts, *similar* to the proposed project, under Alternative B.

As explained in Chapter 5.4, there are existing archaeological, architectural, and historical resources, and potentially unknown resources, in the EIR Study Area that could all be impacted by new demolition, inappropriate modification, or inappropriate new construction under the proposed project or Alternative B. Like the proposed project, Alternative B would be subject to the procedures of conduct following the discovery of human remains set forth in California Health and Safety Code, Public Resources Code, and the California Code of Regulations. In addition, Alternative B would include the same CBPs and mitigation measures as under the proposed project. However, because less overall development would occur under the Alternative B scenario, the potential to impact cultural resources would be *less*, but not eliminated, when compared to the proposed project.

6.4.2.5 ENERGY

As described in Chapter 5.5, Energy, of this Draft EIR, the proposed project would not result in significant impacts related to energy efficiency or conflict with State or local plans for renewable energy or energy efficiency, and no mitigation measures are required. UC Berkeley's energy infrastructure consists of several interconnected systems: electricity and natural gas provided by Pacific Gas and Electric Company (PG&E), and power to some sites provided by East Bay Community Energy (EBCE) and the University of California wholesale power program; on-site PV arrays; in-building chillers; a cogeneration plant on the Campus Park to produce steam and electricity that is powered by natural gas; and a steam plant on the Clark Kerr Campus. These conditions would be the same under both scenarios. In addition, the proposed project's upgrades to the existing cogeneration plant on the Campus Park would result in an overall net increase in electricity demand, but with more efficient operations, and a net decrease in non-renewable natural gas use would occur under both scenarios. The LRDP Update, as well as Alternative B would also include upgrades to the existing electric network on the Campus Park, the Hill Campus West, and the Hill Campus East. Furthermore, there are several potential renewable energy systems being considered such as installation of a solar PV system on the Hill Campus East that would be a Battery Energy Storage System, use of biogas fuel cells, development of a geothermal energy system, and integration of a mechanical energy storage system. Because the improvements realized under Alternative B would be the same as the proposed project, energy efficiency impacts would be *similar* when compared to the proposed project.

All development that occurs in the State is required to comply with best management practices regulated in the 2019 California Green Building Code and 2019 Building Energy Efficiency Standards, which ensure new development would not result in the wasteful or inefficient use of energy. Further, new development, where applicable, would automatically be enrolled in renewable energy supplied by EBCE. Such requirements and enrollment in EBCE would be required under both the proposed project and under Alternative B. Additionally, neither the proposed project nor Alternative B would introduce a level of development and population growth that would be anticipated to necessitate the construction of new energy supply facilities or transmission infrastructure.

Less development would occur under the Alternative B scenario, so energy consumption from construction (including from Housing Projects #1 and #2) would be *less* when compared to the proposed project. However, more new energy efficient UC Berkeley buildings would be constructed near existing services and the UC Berkeley campus under the proposed project, including more student housing with Housing Projects #1 and #2, than under Alternative B. Alternative B would not result in maximizing infill site

development to the same degree as the proposed project. Building the infill sites to their maximum potential and taking full advantage of the PDA and TPA setting surrounding the UC Berkeley campus would be more energy efficient than allowing more older and less energy efficient buildings to remain as proposed under Alternative B. Accordingly, impacts are assumed to be *greater* under Alternative B when compared to the proposed project. Ultimately, as described in the air quality discussion, energy use from VMT would be *greater* under Alternative B because less infill development in PDAs and TPAs would occur when compared to the proposed project. This applies to the implementation of the proposed LRDP Update as well as locating up to a total of 2,082 beds on the combined sites for Housing Projects #1 and #2, which would be reduced under Alternative B. Therefore, overall adverse impacts related to energy efficiency would be *greater* under Alternative B when compared to the proposed project.

6.4.2.6 GEOLOGY AND SOILS

As described in Chapter 5.6, Geology and Soils, of this Draft EIR, the proposed project would result in less-than-significant impacts related to geology and soils, with implementation of CBPs GEO-1 through GEO-10 and Mitigation Measure GEO-5.

Future development under both Alternative B and the proposed project would be subject to the same federal, State, and UC Berkeley regulations that address and prevent hazards associated with geology, soils, and seismicity. Both the proposed project and development under Alternative B would encourage development in urbanized settings where there is less likelihood for impacts from geologic hazards to occur. Although Alternative B would result in less overall development, compliance with existing regulations related to geologic and seismic safety would apply similarly to both future development under Alternative B and the proposed project; therefore, Alternative B would result in *similar* impacts when compared to the proposed project.

6.4.2.7 GREENHOUSE GAS EMISSIONS

As described in Chapter 5.7, Greenhouse Gas Emissions, of this Draft EIR, the proposed project would result in a less-than-significant impact at the program level because implementation of the proposed LRDP Update would generate a decrease in GHG emissions at buildout from existing conditions.

While the proposed LRDP Update includes improvements to the cogeneration plan (see LRDP Goal 4.2), as shown in Table 5.7-7, UC Berkeley GHG Emissions, in Chapter 5.7, even without implementation of these plans, the LRDP Update would generate a decrease in GHG emissions at buildout because of the increased fuel efficiency and improvements in vehicle engine technology along with reductions from statewide implementation of SB 100 renewable energy goals. Alternative B would not necessarily result in the same level of concentrated development and redevelopment in the PDA, TPA, and other urban portions of the EIR Study Area. Reducing development in these areas specifically could lessen the net benefit gained from siting more intense infill near public transit and result in a higher percentage of transit users that may rely on automobiles (as opposed to walking or biking). Therefore, as a result of reducing infill development near transit, Alternative B would not necessarily reduce vehicle trips, which are the major source of criteria GHG emissions from the proposed project. Therefore, because greater VMT would occur under Alternative B, impacts related to GHG emissions would be *greater* when compared to the proposed project.

No GHG emissions would be generated from energy use by Housing Projects #1 and #2 because new buildings would not utilize natural gas, and all electricity would be procured from 100 percent renewable sources in accordance with UC Berkeley sustainability policies. While less development would occur under Alternative B and less GHG emissions would occur from construction, the GHG impacts would be *greater* for Housing Projects #1 and #2 under Alternative B when compared to the proposed project because less infill development would occur, resulting in increased VMT-related GHG emissions. As described in this alternative, the population growth would be the same under both scenarios, but less UC Berkeley housing would be developed in walking distance of the UC Berkeley campus.

Mitigation Measure GHG-2 identifies actions beyond the UC Sustainable Practices Policy and UC Berkeley Sustainability Plan that will achieve additional GHG reductions at UC Berkeley to ensure consistency with the state's long-term climate change goals under EO B-55-18. The mitigation also expands the UC's carbon neutrality commitments. Because Mitigation Measure GHG-2 will reduce Scope 3 GHG emissions resulting from implementation of the LRDP Update to 67 percent below 2018 emissions levels by 2036 and carbon neutral by 2045, the project would not conflict with the UC Berkeley's Carbon Neutrality goals. Alternative B would implement this mitigation measure and therefore, impacts would *similar* when compared to the proposed project.

Overall, impacts from GHG emissions under Alternative B would be *greater* because less infill would occur when compared to the proposed project.

6.4.2.8 HAZARDS AND HAZARDOUS MATERIALS

As described in Chapter 5.8, Hazards and Hazardous Materials, of this Draft EIR, the proposed project would result in less-than-significant impacts related to hazards and hazardous materials, with no mitigation necessary. As discussed in Chapter 5.8 under impact discussion HAZ-4, there are sites within the EIR Study Area that are included on a list of hazardous materials sites. However, contamination at these sites has been fully characterized and remediated with local and regional agency oversight, with any potential residual contamination believed to pose no threat to human health and the environment. Implementation of CBPs HAZ-1 through HAZ-5 would ensure that UC Berkeley follows health and safety procedures and related programs to minimize any potential risks related to hazardous materials.

Under Alternative B, the development program and areas affected would not significantly change but would have reduced development overall. The same federal, State, and UC Berkeley regulations and practices, as well as the CBPs, under the proposed project would apply under Alternative B, to reduce any potential risks related to hazardous materials.

The proposed project was found to have a less-than-significant impact related to the routine transport, use, or disposal of hazardous waste, the release of hazardous waste, or the release of hazardous emissions or handling of hazardous materials in the proximity of an existing or proposed school. As further discussed in Chapter 5.8, Hazards and Hazardous Materials, the EIR Study Area is not located within an airport land use plan area for which potential future development could conflict, and implementation of the proposed project would not conflict with an adopted emergency response plan or emergency evacuation plan. Potential future development and construction of Housing Projects #1 and #2 that could occur in the EIR

Study Area from implementation of the proposed project would be required to comply with all applicable federal, State, and UC Berkeley regulations and programs pertaining to hazards and hazardous materials. Development that would occur under Alternative B including Housing Projects #1 and #2 would be required to comply with the same regulations and programs to reduce risks related to hazardous materials. Therefore, Alternative B would have a *similar* impact when compared to the proposed project.

6.4.2.9 HYDROLOGY AND WATER QUALITY

As described in Chapter 5.9, Hydrology and Water Quality, of this Draft EIR, the proposed project would not result in any significant impacts related to hydrology and water quality and no mitigation measures are required. Compliance with existing regulations and procedures as well as CBP HYD-1, updated CBP HYD-2, CBPs HYD-3 and HYD-4, updated CBP HYD-5, and CBPs HYD-6 through HYD-13 would ensure that pre- and post-construction impacts to water quality would be less than significant. These regulations and procedures would be maintained under Alternative B.

Although Alternative B would result in less development overall, future development would primarily occur within already urbanized areas and would connect to existing drainage systems already in place and be subject to the same existing federal, State, regional, and UC Berkeley regulations and policies relating to hydrology and water quality, similar to the proposed project. Compliance with existing regulations would ensure that pre- and post-construction impacts to water quality would be minimized as future development occurs. Overall, potential future development under Alternative B and the proposed project would be in the same urbanized environments and would be subject to the same existing regulations that address hydrology and water quality impacts. Therefore, impacts under Alternative B would be considered *similar* when compared to the proposed project.

6.4.2.10 LAND USE AND PLANNING

As described in Chapter 5.10, Land Use and Planning, of this Draft EIR, the proposed project would not result in any significant impacts related to land use and planning and no mitigation measures are required. The proposed LRDP Update would implement CBP LU-1 to ensure potential future development would conform to the Physical Design Framework and updated CBP LU-2 to ensure that each individual project built in the Hill Campus West, Hill Campus East, or the City Environs Properties would be assessed to determine whether it could pose potential significant land use impacts not anticipated in the LRDP, and if so, the project would be subject to further evaluation under the California Environmental Quality Act (CEQA).

The proposed project would include development on existing UC Berkeley properties and would not create physical barriers within existing communities such as walls, highways, railroad tracks, airports, or similar development, nor would it remove existing means of access such as roads or bridges. Under Alternative B, development would also occur on existing UC Berkeley properties, and would also not propose physical features that could divide a community. Alternative B would result in a similar development program as under the proposed project, with a reduction in the amount of residential and academic life space planned for development. Alternative B would also implement CBPs LU-1 and LU-2, that would help to minimize potential land use impacts. It would not alter the proposed project in a way that would result in conflicts

with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect in contrast to the proposed project. Therefore, impacts to land use and planning under Alternative B would result in *similar* impacts to those under the proposed project.

6.4.2.11 NOISE

As described in Chapter 5.11, Noise, of this Draft EIR, the proposed project would result in a less-than-significant impact related to operational noise with implementation of CBP NOI-1. Impacts related to vibration would also be less than significant with implementation of Mitigation Measure NOI-2. However, impacts related to construction noise would be significant and unavoidable even with implementation of CBP NOI-2 and NOI-3, and Mitigation Measure NOI-1. At the program level this is because of the unknown nature of the construction activities associated with future projects that may occur near noise-sensitive receptors with respect the project type, equipment list, time of day, phasing and overall construction duration. Significant and unavoidable impacts during construction were found for Housing Projects #1 and #2 because of the height of the nearby sensitive receptors and the infeasibility of constructing sound walls beyond the second story to mitigate the impact from construction equipment.

While UC Berkeley is not required to comply with local regulations and standards for noise, such as city codes, for the purposes of CEQA, UC Berkeley uses noise standards from the applicable municipal code in which the noise-sensitive receptor is located; therefore, potential future development from implementation of the proposed project would be subject to the standards of the Berkeley Municipal Code or the Oakland Municipal Code, depending on location. As specific uses are proposed for particular sites, project-level design, permitting, and/or environmental review would serve to ensure that individual uses would comply with the noise regulations. Future development under Alternative B would also be subject to these applicable standards. Because less construction would occur, noise and vibration from construction would be *less* under Alternative B when compared to the proposed project.

Alternative B would result in less development, including reduced new construction on the sites for Housing Projects #1 and #2, but would generate more VMT due to less infill housing, which is assumed to generate more noise from mobile sources when compared to the proposed project. While reduced development on the sites for Housing Projects #1 and #2 would reduce construction noise, it is assumed the building heights to accommodate the number of beds shown in Table 6-3, Forecasted Net Growth Comparison of the Proposed Project and Alternative B, the significant and unavoidable short-term construction impacts would be *similar*. Ultimately, the increased noise impacts from the long-term operational phase development under the proposed LRDP Update, and Housing Projects #1 and #2 would result in *greater* noise impacts under Alternative B when compared to the proposed project.

6.4.2.12 POPULATION AND HOUSING

As described in Chapter 5.12, Population and Housing, of this Draft EIR, with implementation of Mitigation Measure POP-1, (which establishes a population reporting protocol to support regional planning projections), impacts associated with indirect and direct population growth would be less than significant. On a project level, impacts related to regional population projections are less than significant for Housing Projects #1 and #2.

Also described in Chapter 5.12, the displacement of housing units could occur as UC Berkeley implements the proposed LRDP Update over the buildout horizon of the project. With the addition of Mitigation Measure POP-2 requiring compliance with the UC Relocation Policy. Impacts related to the displacement of a substantial number of people or housing were found to be less than significant at the project level for Housing Project #1. The site for Housing Project #2 is currently a park and no housing displacement would occur under the proposed project or Alternative B.

Implementation of the proposed project focuses on infill development in PDAs and TPAs, which is in alignment with the regional planning framework of *Plan Bay Area*. Further, the proposed project is the overriding policy document at UC Berkeley that plans for space to accommodate population growth that is reasonably foreseeable through 2036-37. Implementation of the proposed project would guide the increased development of 11,731 UC Berkeley beds on the through 2036-37. Alternative B would have the same population growth as the proposed project and would still exceed the regional projections like the proposed project. Like the proposed project, Alternative B would include the updated policy framework of the proposed project that would ensure adequate planning occurs to accommodate the future population increase and future development to extended buildout year through 2036-37. Therefore, impacts under Alternative B would be *similar* when compared to the proposed project with respect to planned population growth.

Alternative B would have the same population growth as the proposed project in the EIR Study Area through 2036-37 but would result in fewer beds to accommodate the growth, including beds at the sites of Housing Projects #1 and #2. Therefore, potential population growth under Alternative B would occupy more non-UC Berkeley housing when compared to the proposed project. Therefore, impacts under Alternative B would be *greater* when compared to those of the proposed project.

In summary, because Alternative B would have the same growth potential as the proposed project but would result in less residential development to accommodate the residential growth, impacts related to population and housing would be *greater* when compared to the proposed project.

6.4.2.13 PUBLIC SERVICES

As described in Chapter 5.13, Public Services, of this Draft EIR, impacts under the proposed project to fire protection services, police services, and libraries were found to be less than significant. Impacts to the Berkeley Unified School District (BUSD) were found to be significant and unavoidable with implementation of Mitigation Measure PS-5 because the current capacity of the BUSD is unavailable and therefore unknown for the preparation of this evaluation. Housing Projects #1 and #2 do not generate housing that can accommodate families with school-aged children, thus, impacts to BUSD are less than significant.

Alternative B would have the same population growth as the proposed project, and therefore, would result in a similar increase in demand on public services as the proposed project. However, there would be reduced development compared to the proposed project. As discussed in Chapter 5.13, because building densities and heights can increase demand on fire protection services, reduced development under Alternative B would result in *less* of an impact to fire protection services due to less density and lower buildings in the built environment.

There would be no change to demands on police services or library services under Alternative B in comparison to the proposed project, as the proposed project would generate the same population that would likely be in the service providers service area, just not on the UC Berkeley campus. Because Alternative B would include residential development, it would have the potential to impact schools, similar to the proposed project, which requires annual reporting on UC Berkeley housing projections to BUSD. Therefore, under Alternative B, impacts to school services would be *similar* to that of the proposed project.

Because Housing Projects #1 and #2 would have reduced development programs under Alternative B, this would result in a potentially decreased demand on fire protection and police services resulting from these project components and impacts would be *less* when compared to the proposed project. As on-site uses would not change, impacts to schools and libraries would be *similar* to the proposed project.

Overall, while library and school services would have *similar* impacts under Alternative B when compared to the proposed project, because of reduced demand to fire protection and police services, impacts under Alternative B would be *less* when compared to the proposed project.

6.4.2.14 PARKS AND RECREATION

As described in Chapter 5.14, Parks and Recreation, of this Draft EIR, the proposed project would not result in significant impacts to parks and recreation facilities in the communities adjoining the UC Berkeley campus, as increased demand from future development under the proposed LRDP Update would be met by existing and proposed UC Berkeley facilities. The proposed project would also not, result in substantial adverse physical impacts associated with the provision of new or physically altered parks facilities; the need for new or physically altered parks facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for parks services, nor would it increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Alternative B would result in less overall development, but only in consideration of undergraduate housing and academic life space. While undergraduate housing would include some recreational facilities, for example the indoor fitness facilities, yoga rooms, and/or open space provided as part of campus life facilities or public facilities under Housing Projects #1 and #2, this would not result in a significant decrease in the amount of recreational space throughout the UC Berkeley campus as compared to the proposed project. Aside from the total space allocated to any recreational facilities that would be included with undergraduate housing potentially being reduced, Alternative B would include the same updated or new parks and recreational facilities as under the proposed project. Therefore, impacts to parks and recreational services under Alternative B from the LRDP program would be *similar* when compared to the proposed project.

While the number of beds provided by Housing Projects #1 and #2 would be reduced under Alternative B, it is assumed the general types of facilities on-site, including amenities provided such as recreational facilities, would still be included. Housing Project #2, which currently provides parks and recreational space on the whole site as People's Park, would also still be developed to support student housing, affordable and

supportive housing, and open space. Therefore, impacts pertaining to parks and recreation under Housing Projects #1 and #2 would be *similar* when compared to the proposed project.

Overall, because there would be minimal changes to any parks and recreational space provided by UC Berkeley under Alternative B in comparison to the proposed project, impacts to parks and recreational facilities would be *similar* to that of the proposed project.

6.4.2.15 TRANSPORTATION

As described in Chapter 5.15, Transportation, of this Draft EIR, the proposed project would not conflict with a governing document/policy addressing the circulation system with implementation of Mitigation Measure TRAN-1 and updated CBP TRAN-1 and TRAN-3, and existing CBP TRAN-2 and TRAN-4. The proposed project would be consistent with CEQA Guidelines Section 15064.3(b) and no mitigation is required. Due to the increased the potential for buildings that are 100 feet or more, a pedestrian hazard from wind events could occur. Mitigation Measure TRAN-3 would require wind evaluation for these buildings once final exterior design is completed. This is a significant and unavoidable impact that can be reduced using building design refinements if feasible.

Buildings and structures 100 feet or more, including Housing Projects #1 and #2 would be required to implement Mitigation Measure TRAN-3 to reduce pedestrian hazards from potential wind events. This impact would be *less* under Alternative B when compared to the proposed project because the reduced development would reduce the building heights, including Housing Projects #1 and #2, below 100 feet.

Alternative B would include the expanded and enhanced goals, principles, and objectives of the proposed project that would improve the transportation system in the EIR Study Area designed to increase multi-modal transportation and enhance bicycle and pedestrian access and safety. As listed in Chapter 3, Project Description, of this Draft EIR, the proposed LRDP Update includes goals that would support the expansion of TDM programs and a reduction in single-occupant vehicle travel. Revised and enhanced objectives would prioritize pedestrian travel and more sustainable and zero carbon transportation solutions. However, less infill development in a TPA would occur, including Housing Projects #1 and #2, which would result in greater VMT when compared to the proposed project. For this reason, impacts under Alternative B for LRDP implementation and construction of Housing Projects #1 and #2 are assumed to be *greater* when compared to the proposed project.

6.4.2.16 TRIBAL CULTURAL RESOURCES

As explained in Chapter 5.16, Tribal Cultural Resources, of this Draft EIR, while there are no identified TCRs that would be impacted by the proposed project, there remains the potential to uncover previously unknown TCRs during construction within the EIR Study Area. Similar to the proposed project, development under Alternative B would be required to comply with applicable regulations as described in Chapter 5.16, such as the Native American Graves Protection and Repatriation Act, California Health and Safety Code, Senate Bill 18, and Assembly Bill 52, as well as the applicable updated CBP CUL-1 and Mitigation Measure TCR-1 described in Chapter 5.16. Housing Projects #1 and #2 would still be included under Alternative B, though with reduced residential capacities potentially resulting in lower building heights but

similar building footprints. However, development of these sites would still result in *similar* risks of uncovering unknown TCRs as the proposed project. Under Alternative B, overall development throughout the EIR Study Area would be *less* when compared to the proposed project. Because less overall development would result in less potential to impact unknown TCRs during construction, Alternative B would have *less* impacts to TCRs in comparison to the proposed project.

6.4.2.17 UTILITIES AND SERVICE SYSTEMS

As described in Chapter 5.17, Utilities and Service Systems, of this Draft EIR, impacts to water, wastewater, stormwater, and electrical, natural gas, and telecommunications utility infrastructure under the proposed project were found to be less than significant with the ongoing implementation of CBP USS-1 through USS-8.. No mitigation measures are required.

The proposed project would result in increased demands on these utilities from UC Berkeley buildings and the occupants of those buildings. Alternative B would be similar to the proposed project but include less residential and academic life development. Therefore, Alternative B would result in less overall water demand, less wastewater and solid waste generation, and less energy and telecommunications demand, from UC Berkeley buildings and the occupants of those buildings when compared to the proposed project. However, because the population growth is assumed to be the same through the 2036-37 horizon year, impacts on demand from this growth to the service providers in the EIR Study Area is assumed to be the *same* when compared to the proposed project.

Like the proposed project, Alternative B would include creek and watershed restoration projects, decentralized green infrastructure and no net increase in stormwater runoff, and upgrades to UC Berkeley's storm drain system, which would reduce stormwater runoff. In addition, with a reduction in building size under Housing Projects #1 and #2, demands on utility infrastructure from Housing Projects #1 and #2 under Alternative B would also be *less* than that of the proposed project.

Overall, impacts to utilities and service systems at the program- and project-level under Alternative B would be *less* when compared to the proposed project.

6.4.2.18 WILDFIRE

As described in Chapter 5.18, Wildfire, of this Draft EIR, the proposed project would result in significant and unavoidable impacts, even with implementation of Mitigation Measures WF-2, WF-3, WF-4, and WF-5. This is conservative conclusion because the project-specific details of future potential development in the Hill Campus East are unknown at the project level and through applicable regulations and UC Berkeley CBPs, project-level impacts can be found to be less than significant. The proposed project would not substantially impair an adopted emergency response or emergency evacuation plan.

While Alternative B would result in less residential and academic life space square footage compared to the proposed project, undergraduate housing is not proposed for areas within the SRA or Very High FHSZ where wildfire risk is greatest. Residential development under the proposed project, and under Alternative B, would be located in already urbanized areas. The reduction of academic life space under Alternative B

could result in less development within the Hill Campus East, where wildfire risk is greatest, however there would still be development within this area including some potential academic life space, infrastructure improvements, and potential renewable energy projects, which would result in similar impacts to those under the proposed project. While there would be reduced development on the Housing Projects #1 and #2 sites under Alternative B, as described in Chapter 5.18, these sites do not result in significant impacts to wildfire as they are relatively flat and currently developed and/or surrounded by existing development. According impacts from implementation of Housing Projects #1 and #2 would be *similar*.

Alternative B would not change wildfire risk. Development under Alternative B would not be different from the proposed project in a way that would impair an adopted emergency response plan or evacuation plan. It would still be required to comply with the same plans and policies described in Section 5.18.1.1, Regulatory Framework, of Chapter 5.18, Wildfire, as the proposed project, and as development types and locations would be similar to that under the proposed project, development under Alternative B would also implement the same CBPs and Mitigation Measures WF-2, WF-3, WF-4, and WF-5. Because the wildfire risks present with the proposed project do not change under Alternative B, impacts would be *similar* in comparison to the proposed project.

6.4.3 RELATIONSHIP OF ALTERNATIVE B TO THE PROJECT OBJECTIVES

Alternative B would result in less housing overall. In addition, total academic life square footage would be less than the proposed project. The rest of the development program would remain the same. While overall residential space would be less under Alternative B than the proposed project, Alternative B would still include an increase in housing provided by UC Berkeley. In addition, total space would be developed to the extent allowed under Alternative B, which would be similar to the proposed project but provide less of an increase in academic life space. In spite of the differences in square footage, Alternative B would still include all of the other components of the proposed project, and therefore still generally meet the objectives of the proposed LRDP Update, while use of some spaces may not be as utilized to the same degree as under the proposed project.

Alternative B would also result in reductions in the development programs for Housing Projects #1 and #2. The two housing projects would include the same types of project components as under the proposed project. For example, each project would still provide some campus life space, commercial space, and/or open space, as well as the affordable and supportive housing component under Housing Project #2. However, the number of residences or beds provided under each would be reduced. This would result in potentially smaller building footprints and/or lower building heights. Housing Project #1 would still be able to meet its objectives in redeveloping underutilized UC Berkeley property to provide student housing; creating accessible student housing with no residential parking adjacent to the Campus Park; providing sustainability features in the building design, such as solar panels, sun shades, and landscaping with native and/or adaptive and drought-resistant plant materials; providing essential amenities and campus life facilities on-site with indoor and outdoor spaces; providing architecturally distinctive project with high quality materials; and providing a pedestrian-friendly project that includes housing, open space and greenery, office space, and neighborhood retail. Housing Project #2 would also still be able to meet its

objectives in redeveloping a UC Berkeley property to provide student housing and affordable and supportive housing; creating accessible student housing and affordable and supportive housing with limited parking in close proximity to the Campus Park; providing sustainability features in the building design such as solar panels, LED lighting and lighting controls, and landscaping with native and/or adaptive and drought-resistant plant materials; providing essential amenities and campus life facilities on-site with indoor and outdoor uses; providing an architecturally distinctive project with high quality materials; and providing health, mature trees on the project site.

Overall, while Alternative B would not maximize UC Berkeley property to the extent of the proposed project, it would still generally meet the proposed project's objectives. See Section 6.7.2, Objectives Comparison Summary, for a complete listing of the project objectives and a comparison of the objectives by project alternative.

6.5 ALTERNATIVE C: REDUCED VEHICLE MILES TRAVELED

6.5.1 DESCRIPTION

Under Alternative C, the Reduced Vehicle Miles Traveled Alternative, the LRDP Update would incorporate additional project features that would serve to reduce vehicle miles traveled (VMT), including the following:

- Increased remote learning and working opportunities to reduce the need to commute to the UC Berkeley campus.
- Reduced parking on campus with zero net new parking spaces through the Draft EIR's buildout horizon academic year of 2036-37 in order to discourage commuting by personal vehicle.
- An additional 500 beds provided for faculty and staff in addition to that provided in the proposed project. Half of these beds would be developed under redevelopment within the Clark Kerr Campus, and the remaining half would be developed under redevelopment within the City Environs Properties. Having more faculty and staff housing closer to the UC Berkeley campus would result in less faculty and staff having to commute to the campus, in turn reducing VMT.

Other development, such as increased academic life and campus life square footage, under the proposed project would remain the same under Alternative C. Table 6-4, Forecasted Net Growth Comparison of the Proposed Project and Alternative C, shows the difference between the net growth projections of the proposed project compared to Alternative C. Under Alternative C, the development programs for Housing Projects #1 and #2 would remain the same as under the proposed project.

The alternatives analysis assumes that all applicable mitigation measures recommended for the proposed project would apply to Alternative C.

TABLE 6-4 FORECASTED NET GROWTH COMPARISON OF THE PROPOSED PROJECT AND ALTERNATIVE C

Category	Proposed Project	Alternative C: Reduced Vehicle Miles Traveled	Change between the Proposed Project and Alternative C
LRDP Update			
Residential Beds			
Hill Campus West	0	0	-
Hill Campus East	0	0	-
Clark Kerr Campus	2,364	2,614	250 more residential beds
City Environs Properties	9,367	9,617	250 more residential beds
Total Residential Beds ^a	11,731	12,231	500 more residential beds
Academic Life Square Feet	2,284,588	2,284,588	-
Campus Life Square Feet	906,539	906,539	-
Student Population	8,492	8,492 ^b	-
Employees ^c	3,579	3,579 ^b	-
Parking Spaces ^d	1,240	0	1,240 fewer parking spaces
Housing Project #1			
Residential Beds	770	770	-
Population	770	770	-
Employees	46	46	-
Parking	21	21	-
Housing Project #2			
Residential Beds	1,312	1,312	-
Population	1,312	1,312	-
Employees	57	57	-
Parking	11	11	-

Notes:

a. Includes residential beds listed under Housing Project #1 and Housing Project #2.

b. The undergraduate student population is mandated by the State and not individual UC System campuses. Therefore, the “projected” number of undergraduate students and employees, which are directly linked to the number of students, for buildout year 2036-37 would be the same for all the alternatives.

c. Employees are made up of both faculty and staff.

d. Includes parking spaces listed under Housing Project #1 and Housing Project #2.

Source: UC Berkeley, PlaceWorks, 2020.

6.5.2 IMPACT ANALYSIS BY ENVIRONMENTAL TOPIC

The potential environmental impacts associated with Alternative C when compared to the proposed project are described herein.

6.5.2.1 AESTHETICS

As described in Chapter 5.1, Aesthetics, of this Draft EIR, the proposed project would not result in any significant impacts related to scenic vistas, scenic views, or light and glare with the exception of the

installation of solar arrays. Mitigation Measure AES-3 would be required to reduce impacts pertaining to light and glare from future solar array projects to a less-than-significant level.

Because the EIR Study Area where future development could occur is the same under both scenarios, potential future development under Alternative C that meets all the criteria of PRC Section 21099 would have the potential to be exempt from aesthetics evaluation and are not considered significant impacts on the environment. Like the proposed LRDP Update, aesthetics impacts under Alternative C would pertain only to projects in the EIR Study Area that would not meet all the PRC Section 21099 criteria. Similar to the proposed project, most development under Alternative C would still be expected to occur in existing urban areas primarily in the form of infill/intensification on sites either already developed and/or underutilized, where future development would have a lesser impact on scenic vistas when compared to development on an undeveloped area or isolated parcel away from existing development. In this way, aesthetic impacts are the same under both scenarios.

The development under Alternative C would be the same as under the proposed project, but with the addition of increased development within the Clark Kerr Campus and the City Environs Properties to accommodate more faculty and staff housing. As shown in Figure 5-1, Priority Development Areas and Transit Priority Areas, in Chapter 5, Environmental Analysis, while many of the City Environs Properties are located within a TPA and would therefore be exempt under CEQA from analysis of aesthetics impacts, a few of the City Environs Properties are not located within a TPA, and the Clark Kerr Campus is largely not within a TPA.

While the proposed LRDP Update includes development within the Clark Kerr Campus and the City Environs Properties, adding additional residential units for faculty and staff would result in increased densification of these zones compared to the proposed project, which would in turn have more of a likelihood of resulting in potential aesthetics impacts due to potentially more dramatic visual changes and more potential light and glare. Potentially higher buildings to accommodate increased densification of these zones may also increase the potential to obstruct scenic views.

Applicable future projects under both scenarios would be subject to UC Berkeley's design review for consistency with UC Berkeley's policies governing scenic quality as described in Section 5.1.1.1, Regulatory Framework, in Chapter 5.1, Aesthetics. Alternative C would also incorporate updated CBPs AES-1, AES-3, AES-4, AES-5 that would reduce impacts pertaining to scenic quality and Mitigation Measure AES-3 which would reduce impacts pertaining to light and glare from future solar array projects.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be the same when compared to the proposed project. However, at the program level, because Alternative C would result in increased development overall, impacts to aesthetics under Alternative C would be greater when compared to the proposed project.

6.5.2.2 AIR QUALITY

As described in Chapter 5.2, Air Quality, implementation of the proposed project would conflict with the 2017 Clean Air Plan because the student population growth is greater than forecast in the current LRDP.

The proposed LRDP Update includes Mitigation Measure AIR-1 that requires UC Berkeley to coordinate early with the Association of Bay Area Government/ Metropolitan Transportation Commission to ensure that the Bay Area Air Quality Management District's (BAAQMD) Clean Air Plan accounts for UC Berkeley-related population changes. Because the population growth would be the same under both scenarios, the conflict with the 2017 Clean Air Plan would remain, and both projects would implement Mitigation Measure AIR-1, the impacts under Alternative C would be *similar* when compared to the proposed LRDP Update. Under the proposed project, the two housing projects were found to be consistent with the 2017 Clean Air Plan and impacts were therefore less than significant. Under Alternative C, there would be no change to the two projects and impacts would be the *same*.

The proposed project would result in significant and unavoidable impacts during the construction phase at the program level even with implementation of updated CBPs AIR-2 and AIR-3 to reduce fugitive dust, fugitive emissions, emissions from nonessential idling, and nitrogen oxide (NO_x) emissions and implementation of Mitigation Measure AIR-2.1 that requires construction equipment that meets the United States Environmental Protection Agency Tier 4 emissions standards or higher for certain projects. This is because site specific details are unknown. Accordingly, impacts would be similar under both scenarios. However, with implementation of updated CBPs AIR-2 and AIR-3 and Mitigation Measure AIR-2.1, AIR-2.2, and AIR-3, construction air quality and health risk impacts for Housing Projects #1 and #2 (which are unchanged in this alternative) were found to be less than significant. Under Alternative C, there would be more development potential throughout the EIR Study Area. Accordingly, impacts from construction air quality pollutants would be *similar* for the two housing projects, but *greater* when compared to the Proposed LRDP Update as a whole.

Buildout of the proposed LRDP Update would generate a substantial increase in reactive organic gas (ROG) emissions that exceeds the BAAQMD regional significance thresholds. The increase in NO_x and particulate matter (PM₁₀, and PM_{2.5}) emissions would not exceed the BAAQMD significance thresholds. Internal combustion associated with motor vehicle usage is the major source of ROGs, but other sources of ROGs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The vast majority (99 percent) of the emissions increase is associated with ROGs from consumer products and repainting buildings at the UC Berkeley campus. Faculty/staff commute VMT makes up the remaining 1 percent. Under Alternative C, more infill housing would occur thus *less* VMT and subsequent VMT emissions would occur when compared to the proposed project. Therefore, ROGs from VMT emissions would be *less* when compared to the proposed project. UC Berkeley would implement Mitigation Measure AIR-2 which require use of low or zero-ROG paints. This mitigation measure would be implemented under both scenarios. Therefore, because more construction would occur under Alternative C, impacts from these types of ROGs are assumed to be *greater* under Alternative C when compared to the proposed project. As described in Chapter 5.2, Air Quality, there are no measures available to reduce or regulate consumer products that release ROGs. Operational impacts from Housing Projects #1 and #2 would not exceed the thresholds for the release of air pollutants. Under Alternative C, the same amount of housing would be built on the two housing sites; thus, emissions from building operations would be the *similar* to the proposed project.

Under the proposed project health risks from construction activities in close proximity to receptors sensitive to toxic air contaminants would be significant and unavoidable at the program level even with

implementation of Mitigation Measure AIR-3 and CBP AIR-3. This is because site specific details are unknown. While the infill nature and close proximity to receptors would be the same under both scenarios, more development potential would occur under Alternative C and therefore short-term construction health risks would be *greater* when compared to the proposed project. The two housing projects would have less than significant impacts related to construction health risks to off-site receptors. Because Housing Projects #1 and #2 would have the same level of construction, impacts are assumed to be the *similar* under Alternative C when compared to the proposed project.

The proposed project would pose no operational community risks or hazards, including carbon monoxide (CO) hotspots, and would not generate any substantial odors. Because more development would occur under Alternative C, impacts from operational health risks and substantial odors are assumed to be *greater* when compared to the proposed project.

Overall, Alternative C would result in reduced VMT emissions from infill development, greater construction related emissions, greater construction related and operational health risks, and greater operational ROG emissions from the 500 additional beds, air quality impacts under Alternative C would be *greater* when compared to the proposed project at the program level and *similar* for Housing Projects #1 and #2.

6.5.2.3 BIOLOGICAL RESOURCES

As discussed in Chapter 5.4, Biological Resources, of this Draft EIR, the impacts to biological resources from the proposed project are fully mitigable with implementation of updated CBPs BIO-1 through BIO-8, and CBP BIO-11, existing CBPs BIO-9 and BIO-10, and Mitigation Measure BIO-4. Potential future development under Alternative C would be the same as under the proposed project, but with additional development within the Clark Kerr Campus and the City Environs Properties to accommodate more faculty and staff housing. While increased remote learning and working opportunities, and reduced parking would be intended to lower VMT under Alternative C, these would not have any bearing on biological resource impacts. However, increased physical development under Alternative C would potentially result in *greater* impacts to biological resources when compared to the proposed project.

Under Alternative C, the additional residential units for faculty and staff would result in increased densification of the EIR Study Area. The same mitigation measures described for the proposed project, would apply under Alternative C. While development would be concentrated in the same urban areas as under the proposed project, development would be more intensive under Alternative C, and therefore has the potential to impact more biological resources.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be the *same* when compared to the proposed project. However, at the program level, because Alternative C would result in increased development overall, impacts to biological resources under Alternative C would be *greater* when compared to the proposed project.

6.5.2.4 CULTURAL RESOURCES

As described in Chapter 5.4, Cultural Resources, of this Draft EIR, the proposed project would result in significant and unavoidable impacts, due to the potential of impacts on historic resources under the proposed LRDP Update as well as Housing Projects #1 and #2, even with implementation of updated CBP CUL-1, and Mitigation Measures CUL-1.1a through CUL-1.1b, and CUL-2.

Alternative C would include a similar development program as the proposed project, but with increased overall development, some of which would be located on the historic Clark Kerr campus. Development under Housing Projects #1 and #2 would be the same as under the proposed project. As explained in Chapter 5.4, there are existing archaeological, architectural, and historical, resources, and potentially unknown resources, in the EIR Study Area, that could all be impacted by new demolition, inappropriate modification of buildings, or inappropriate new construction under the proposed project. The same would apply under Alternative C. Like the proposed project, Alternative C would be subject to the procedures of conduct following the discovery of human remains set forth in California Health and Safety Code, Public Resources Code, and the California Code of Regulations. In addition, Alternative C would include the same CBPs and mitigation measures as under the proposed project.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be *similar* when compared to the proposed project. However, at the program level, because Alternative C would result in increased development overall, some of which would be focused on the Clark Kerr Campus Historic District, impacts to cultural resources under Alternative C would be *greater* when compared to the proposed project.

6.5.2.5 ENERGY

As described in Chapter 5.5, Energy, of this Draft EIR, the proposed project would not result in significant impacts related to energy efficiency or conflict with State or local plans for renewable energy or energy efficiency, and no mitigation measures are required. Campus energy infrastructure consists of several interconnected systems: electricity and natural gas provided by Pacific Gas and Electric Company (PG&E), and power to some sites provided by East Bay Community Energy (EBCE) and the University of California wholesale power program; on-site PV arrays; in-building chillers; a cogeneration plant on the Campus Park to produce steam and electricity that is powered by natural gas; and a steam plant on the Clark Kerr Campus. These conditions would be the same under both scenarios. In addition, the proposed project's upgrades to the existing cogeneration plant on the Campus Park that would result in an overall net increase in electricity demand, but with more efficient operations, and a net decrease in non-renewable natural gas use would occur under both scenarios. The proposed LRDP Update, as well as Alternative C, would also include upgrades to the existing electric network on the Campus Park, the Hill Campus West, and the Hill Campus East. Furthermore, there are several potential renewable energy systems being considered such as installation of a solar PV system on the Hill Campus East that would be a Battery Energy Storage System, use of biogas fuel cells, development of a geothermal energy system, and integration of a mechanical energy storage system. Because these improvements would also be included under Alternative C, energy efficiency impacts would be *similar* when compared to the proposed project.

All development that occurs in the State is required to comply with best management practices regulated in the 2019 California Green Building Code and 2019 Building Energy Efficiency Standards, which ensure new development would not result in the wasteful or inefficient use of energy. Further, new development would automatically be enrolled in renewable energy supplied by EBCE. Such requirements and enrollment in EBCE would be required under both the proposed project and under Alternative C. Additionally, neither the proposed project nor Alternative C would introduce a level of development and population growth that would be anticipated to necessitate the construction of new energy supply facilities or transmission infrastructure.

More infill development would occur under the Alternative C scenario, so energy consumption from construction would be *greater* when compared to the proposed project. For operation, the development of additional new energy efficient buildings constructed on infill sites would also reduce VMT, therefore, adverse energy efficiency impacts are assumed to be *less* under Alternative C when compared to the proposed project. Ultimately, as described in the air quality discussion, energy use from VMT would be *less* under Alternative C because more infill development in PDAs and TPAs would occur when compared to the proposed project. This applies to the implementation of the proposed LRDP Update as well as locating up to a total of 1,970 beds on the combined sites for Housing Projects #1 and #2, which would also occur under Alternative C. Therefore, overall adverse impacts related to energy efficiency would be *less* under Alternative C at the program level, but *similar* for Housing Projects #1 and #2 when compared to the proposed project.

6.5.2.6 GEOLOGY AND SOILS

As described in Chapter 5.6, Geology and Soils, of this Draft EIR, the proposed project would result in less-than-significant impacts related to geology and soils, with implementation of CBPs GEO-1 through GEO-10 and Mitigation Measure GEO-5.

Future development under both Alternative C and the proposed project would be subject to the same federal, State, and UC Berkeley regulations that address and prevent hazards associated with geology, soils, and seismicity. Both the proposed project and development under Alternative C would encourage development in urbanized settings where there is less likelihood for impacts from geologic hazards to occur. Although Alternative C would result in more overall development, compliance with the same federal, State, and UC Berkeley regulations, though, as well as following CBPs GEO-1 through GEO-10, and Mitigation Measure GEO-5 would ensure that any potential development within this area would minimize potential geological impacts.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be *similar* when compared to the proposed project. However, at the program level, because Alternative C would result in increased development overall, impacts to geology and soils under Alternative C would be *greater* when compared to the proposed project.

6.5.2.7 GREENHOUSE GAS EMISSIONS

As described in Chapter 5.7, Greenhouse Gas Emissions, of this Draft EIR, the proposed project would result in a less-than-significant impact at the program level because implementation of the proposed LRDP Update would generate a decrease in GHG emissions at buildout from existing conditions.

While the proposed LRDP Update includes improvements to the cogeneration plan (see LRDP Goal 4.2), as shown in Table 5.7-7, UC Berkeley GHG Emissions, in Chapter 5.7, even without implementation of these plans, the proposed LRDP Update would generate a decrease in GHG emissions at buildout because of the increased fuel efficiency and improvements in vehicle engine technology along with reductions from statewide implementation of SB 100 renewable energy goals. Alternative C would result in a greater concentration of development and redevelopment in the PDA, TPA, and other urban portions of the EIR Study Area. Increasing development in these areas specifically would improve upon the net benefit gained from siting more intense infill near public transit and result in a higher percentage of transit users that may otherwise rely on automobiles (as opposed to walking or biking). Therefore, as a result of increasing infill development near transit, Alternative C would further reduce vehicle trips, which are the major source of criteria GHG emissions from the proposed project. Therefore, because less VMT would occur under Alternative C, impacts related to GHG emissions would be *less* when compared to the proposed project.

No GHG emissions would be generated from energy use by Housing Projects #1 and #2 because new buildings would not utilize natural gas, and all electricity would be procured from 100 percent renewable sources in accordance with UC Berkeley sustainability policies. Compliance with the UC Berkeley sustainability policy results in decreased annual GHG emissions compared to existing conditions (either through UC Berkeley sustainability initiatives, offsets, or a combination of both). As a result, implementation of Housing Projects #1 and #2 would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions impacts. The same development would occur on these sites under both scenarios and therefore impacts would be *similar*.

Mitigation Measure GHG-2 identifies actions beyond the UC Sustainable Practices Policy and UC Berkeley Sustainability Plan that will achieve additional GHG reductions at UC Berkeley to ensure consistency with the state's long-term climate change goals under EO B-55-18. The mitigation also expands the UC's carbon neutrality commitments. Because Mitigation Measure GHG-2 will reduce Scope 3 GHG emissions resulting from implementation of the proposed LRDP Update to 67 percent below 2018 emissions levels by 2036 and carbon neutral by 2045, the project would not conflict with the UC Berkeley's Carbon Neutrality goals. Alternative C would implement this mitigation measure and therefore, impacts would *similar* when compared to the proposed project.

Overall, impacts from GHG emissions under Alternative C would be *less* than the proposed project on a program level and as additional residential development proximate to Campus Park would further reduce VMT and consequent GHG emissions, compared to the proposed project.

6.5.2.8 HAZARDS AND HAZARDOUS MATERIALS

As described in Chapter 5.8, Hazards and Hazardous Materials, of this Draft EIR, the proposed project would result in less-than-significant impacts related to hazards and hazardous materials, with no mitigation necessary. As discussed in Chapter 5.8 under impact discussion HAZ-4, there are sites within the EIR Study Area that are included on a list of hazardous materials sites. However, contamination at these sites has been fully characterized and remediated with local and regional agency oversight, with any potential residual contamination believed to pose no threat to human health and the environment. Implementation of CBPs HAZ-1 through HAZ-5 would ensure that UC Berkeley follows health and safety procedures and related programs to minimize any potential risks related to hazardous materials.

Under Alternative C, the development program and areas affected would not significantly change but would have increased development overall. The same federal, State, and UC Berkeley regulations and practices under the proposed project would apply under Alternative C, as well as the CBPs, in order to reduce any potential risks related to hazardous materials.

The proposed project was found to have a less-than-significant impact related to the routine transport, use, or disposal of hazardous waste, the release of hazardous waste, or the release of hazardous emissions or handling of hazardous materials in the proximity of an existing or proposed school. As further discussed in Chapter 5.8, Hazards and Hazardous Materials, the EIR Study Area is not located within an airport land use plan area for which potential future development could conflict, and implementation of the proposed project would not conflict with an adopted emergency response plan or emergency evacuation plan. Potential future development that could occur in the EIR Study Area from implementation of the proposed project would be required to comply with all applicable federal, State, and UC Berkeley regulations and programs pertaining to hazards and hazardous materials. Development that would occur under Alternative C would be required to comply with the same regulations and programs to reduce risks related to hazardous materials. Therefore, Alternative C would have a *similar* impact when compared to the proposed project.

6.5.2.9 HYDROLOGY AND WATER QUALITY

As described in Chapter 5.9, Hydrology and Water Quality, of this Draft EIR, the proposed project would not result in any significant impacts related to hydrology and water quality and no mitigation measures are required. Compliance with existing regulations and procedures as well as CBP HYD-1, updated CBP HYD-2, CBPs HYD-3 and HYD-4, updated CBP HYD-5, and CBPs HYD-6 through HYD-13 would ensure that pre- and post-construction impacts to water quality would be less than significant. These regulations and procedures would be maintained under Alternative C.

Although Alternative C would result in increased development overall, future development would largely occur within already urbanized areas similar to the proposed project and would connect to existing drainage systems already in place and be subject to the same existing federal, State, regional, and UC Berkeley regulations and policies relating to hydrology and water quality. Compliance with existing regulations would ensure that pre- and post-construction impacts to water quality would be minimized as future development occurs. Overall, potential future development under Alternative C and the proposed

project would be in the same urbanized environments and would be subject to the same existing regulations that address hydrology and water quality impacts.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be *similar* when compared to the proposed project. However, at the program level, because Alternative C would result in increased development overall, impacts related to hydrology and water quality under Alternative C would be *greater* when compared to the proposed project, as the additional development could result in greater areas of impervious surfaces.

6.5.2.10 LAND USE AND PLANNING

As described in Chapter 5.10, Land Use and Planning, of this Draft EIR, the proposed project would not result in any significant impacts related to land use and planning and no mitigation measures are required. The proposed LRDP Update would implement CBP LU-1 to ensure potential future development would conform to the Physical Design Framework and updated CBP LU-2 to ensure that each individual project built in the Hill Campus West, Hill Campus East, or the City Environs Properties would be assessed to determine whether it could pose potential significant land use impacts not anticipated in the LRDP, and if so, the project would be subject to further evaluation under the California Environmental Quality Act (CEQA).

The proposed project would include development on existing UC Berkeley properties and would not create physical barriers within existing communities such as walls, highways, railroad tracks, airports, or similar development, nor would it remove existing means of access such as roads or bridges. Alternative C would include a similar development program to the proposed project with differences being the addition of increased remote learning and working opportunities, zero net new parking spaces, and increased faculty and staff housing within the Clark Kerr Campus and the City Environs Properties. Increased remote learning and working opportunities under Alternative C would not result in any impacts pertaining to land use. Reduced parking intended to lower VMT would not result in physical divisions to existing communities or result in conflicts with land use plans intended to reduce environmental effects. These measures would be intended to further reduce potential environmental effects of increased development within the Clark Kerr Campus and the City Environs, which are already identified and analyzed under the proposed project. This increased development would also not result in incompatible land uses as these areas allow for and are adjacent to residential land uses. Therefore, this increased development would not conflict with land use regulations adopted for the purpose of avoiding or mitigating an environmental impact.

Under Alternative C, development would occur on existing UC Berkeley properties, and would not propose physical features that could divide a community. Similar to the proposed project, future development under Alternative C would be required to comply with CBPs LU-1 and LU-2, that would help to minimize potential land use impacts. Future development under Alternative C would not alter the proposed project in a way that would result in conflicts with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, impacts to land use and planning under Alternative C would result in *similar* impacts to those under the proposed project.

6.5.2.11 NOISE

As described in Chapter 5.11, Noise, of this Draft EIR, the proposed project would result in a less-than-significant impact related to operational noise with implementation of CBP NOI-1. Impacts related to vibration would also be less than significant with implementation of Mitigation Measure NOI-2. However, impacts related to construction noise would be significant and unavoidable even with implementation of CBP NOI-2 and NOI-3, and Mitigation Measure NOI-1. At the program level this is because of the unknown nature of the construction activities associated with future projects that may occur near noise-sensitive receptors with respect the project type, equipment list, time of day, phasing and overall construction duration. Significant and unavoidable impacts during construction were found for Housing Projects #1 and #2 because of the height of the nearby sensitive receptors and the infeasibility of constructing sound walls beyond the second story to mitigate the impact from construction equipment.

While UC Berkeley is not required to comply with local regulations and standards for noise, such as city codes, for the purposes of CEQA, UC Berkeley uses noise standards from the applicable municipal code in which the noise-sensitive receptor is located; therefore, potential future development from implementation of the proposed project would be subject to the standards of the Berkeley Municipal Code or the Oakland Municipal Code, depending on location. As specific uses are proposed for particular sites, project-level design, permitting, and/or environmental review would serve to ensure that individual uses would comply with the noise regulations. Future development under Alternative C would also be subject to these applicable standards. Because *more* construction would occur, noise and vibration from construction would be *greater* under Alternative C when compared to the proposed project.

Alternative C would result in *more* development throughout the EIR Study Area within PDAs and TPAs, but the same amount of new construction would occur on the sites for Housing Projects #1 and #2 and impacts would be considered *similar* to the proposed project. Because this alternative would create more infill housing it is assumed to generate *less* VMT. Accordingly, this alternative is assumed to generate *less* noise from mobile sources when compared to the proposed project. Because the same amount of development on the sites for Housing Projects #1 and #2 would occur, construction noise would remain the same as the proposed project. Ultimately, the reduced noise impacts from the long-term operational phase would result in *less* noise impacts under Alternative C when compared to the proposed project.

6.5.2.12 POPULATION AND HOUSING

As described in Chapter 5.12, Population and Housing, of this Draft EIR, with implementation of Mitigation Measure POP-1, (which establishes a population reporting protocol to support regional planning projections), impacts associated with indirect and direct population growth would be less than significant. On a project level, impacts related to regional population projections are less than significant for Housing Projects #1 and #2.

Also described in Chapter 5.12, the displacement of housing units could occur as UC Berkeley implements the proposed LRDP Update over the buildout horizon of the project. With the addition of Mitigation Measure POP-2 requiring compliance with the UC Relocation Policy. Impacts related to the displacement of a substantial number of people or housing were found to be less than significant at the project level for

Housing Project #1. The site for Housing Project #2 is currently undeveloped and no housing displacement would occur under the proposed project or Alternative C. Under Alternative C, displacement impacts would be *similar* to the proposed project, as the development program for both sites is the same. Implementation of the proposed project focuses on infill development in PDAs and TPAs, which is in alignment with the regional planning framework of *Plan Bay Area*. Further, the proposed project is the overriding policy document at UC Berkeley that plans for space to accommodate population growth that is reasonably foreseeable through 2036-37. Implementation of the proposed project would guide the increased development of 11,731 beds on the UC Berkeley campus through 2036-37. Alternative C would have the same population growth as the proposed project and would still exceed the regional projections like the proposed project. Like the proposed project, Alternative C would include the updated policy framework of the proposed project that would ensure adequate planning occurs to accommodate the future population increase and future development to extended buildout year through 2036-37. Therefore, impacts under Alternative C would be *similar* when compared to the proposed project with respect to planned population growth.

Alternative C would have the same population growth as the proposed project in the EIR Study Area through 2036-37 but would result in more beds to accommodate the growth. Therefore, potential population growth under Alternative C would occupy less non-UC Berkeley housing when compared to the proposed project. Therefore, impacts related to population and housing under Alternative C would be *less* when compared to those of the proposed project. For Housing Projects #1 and #2, impacts would be *similar* to the proposed project as the development program is the same.

In summary, because Alternative C would have the same growth potential as the proposed project but would result in increased residential development to accommodate the residential growth, impacts related to population and housing would be *less* when compared to the proposed project.

6.5.2.13 PUBLIC SERVICES

As described in Chapter 5.13, Public Services, of this Draft EIR, impacts under the proposed project to fire protection services, police services, and libraries were found to be less than significant. Impacts to the Berkeley Unified School District (BUSD) were found to be significant and unavoidable with implementation of Mitigation Measure PS-5 because the current capacity of the BUSD is unavailable and therefore unknown for the preparation of this evaluation. Housing Projects #1 and #2 do not generate housing that can accommodate families with school-aged children, thus, impacts to BUSD are less than significant.

Under Alternative C, the UC Berkeley population would not differ than under the proposed project. However, there would be increased residential development compared to the proposed project. As discussed in Chapter 5.13, because increased density can result in greater demand on fire protection services, increased density of the built environment under Alternative C would therefore result in *greater* impacts to fire protection services.

While the UC Berkeley population would not change under Alternative C in comparison to the proposed project, additional development within the city could result in a greater overall city population. This would result in potentially *more* demand on police service. In addition, the increased population in the city of

6. ALTERNATIVES TO THE PROPOSED PROJECT

Berkeley could result in *greater* impacts on City of Berkeley library services when compared to the proposed project.

While there would be increased faculty and staff housing development under Alternative C, *similar* to the proposed project annual reporting on UC Berkeley housing projections to BUSD would be required through Mitigation Measure PS-5. Therefore, under Alternative C, impacts to school services would be *similar* to that of the proposed project.

Because Housing Projects #1 and #2 would not change under Alternative C, impacts to public services from these project components would be *similar* to the proposed project.

Overall, while school services would have similar impacts under Alternative C to the proposed project, because of *greater* potential impacts to police services, fire protection services, and library services, impacts under Alternative C would be *greater* when compared to the proposed project.

6.5.2.14 PARKS AND RECREATION

As described in Chapter 5.14, Parks and Recreation, of this Draft EIR, the proposed project would not result in significant impacts to parks and recreation facilities in the communities adjoining the university, as increased demand from future development under the proposed LRDP Update would be met by existing and proposed UC Berkeley facilities. The proposed project would also not result in substantial adverse physical impacts associated with the provision of new or physically altered parks facilities, need for new or physically altered parks facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for parks services, nor would it increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Alternative C would result in increased overall development, but only in terms of faculty and staff housing. While this would add more housing within the EIR Study Area, it would not change the total UC Berkeley projected population that was used in Chapter 5.14 to analyze future demands on parks and recreational services. However, as demonstrated in Chapter 5.14, because UC Berkeley provides ample space for parks and recreation, this would not significantly alter the demand on other UC Berkeley or other public parks and recreational facilities. Therefore, because there would be minimal changes to parks and recreation under Alternative C in comparison to the proposed project, the proposed LRDP Update program under Alternative C would result in *similar* impacts to parks and recreation when compared to the proposed project.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be the *similar* when compared to the proposed project. Overall, impacts to parks and recreation under Alternative C would be *similar* when compared to the proposed project.

6.5.2.15 TRANSPORTATION

As described in Chapter 5.15, Transportation, of this Draft EIR, the proposed project would not conflict with a governing document/policy addressing the circulation system with implementation of Mitigation Measure

TRAN-1 and updated CBP TRAN-1 and TRAN-3, and existing CBP TRAN-2 and TRAN-4. The proposed project would be consistent with CEQA Guidelines Section 15064.3(b) and no mitigation is required. Due to the increased the potential for buildings that are 100 feet or more, a pedestrian hazard from wind events could occur. Mitigation Measure TRAN-3 would require wind evaluation for these buildings once final exterior design is completed. This is a significant and unavoidable impact that can be reduced using building design refinements if feasible.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be *similar* when compared to the proposed project.

Alternative C would include the expanded and enhanced goals, principles, and objectives of the proposed project that would improve the transportation system in the EIR Study Area designed to increase multi-modal transportation and enhance bicycle and pedestrian access and safety. As listed in Chapter 3, Project Description, of this Draft EIR, the proposed LRDP Update includes goals that would support the expansion of TDM programs and a reduction in single-occupant vehicle travel. Revised and enhanced objectives would prioritize pedestrian travel and more sustainable and zero carbon transportation solutions. Because Alternative C would include programs to allow increased remote learning and work opportunities and increase the amount of infill residential development intended for faculty and staff in a TPA, Alternative C would result in less VMT when compared to the proposed project. At the program level, for this reason, impacts under Alternative C are assumed to be *less* when compared to the proposed project.

6.5.2.16 TRIBAL CULTURAL RESOURCES

As explained in Chapter 5.16, Tribal Cultural Resources, of this Draft EIR, while there are no identified TCRs that would be impacted by the proposed project, there remains the potential to uncover previously unknown TCRs during construction within the EIR Study Area. Similar to the proposed project, development under Alternative C would be required to comply with applicable regulations as described in Chapter 5.16, such as the Native American Graves Protection and Repatriation Act, California Health and Safety Code, Senate Bill 18, and Assembly Bill 52, as well as updated CBP CUL-1 and Mitigation Measure TCR-1 described in Chapter 5.16. Housing Projects #1 and #2 would not change under Alternative C and would therefore result in similar impacts to TCRs.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be *similar* when compared to the proposed project. However, at the program level, because Alternative C would result in increased development overall, impacts to TCRs under Alternative C would be *greater* when compared to the proposed project.

6.5.2.17 UTILITIES AND SERVICE SYSTEMS

As described in Chapter 5.17, Utilities and Service Systems, of this Draft EIR, impacts to water, wastewater, stormwater, and electrical, natural gas, and telecommunications utility infrastructure under the proposed project were found to be less than significant with the ongoing implementation of CBP USS-1 through USS-8. No mitigation measures are required.

The proposed project would result in increased demands on these utilities. Alternative C would be similar to the proposed project but include additional residential space for faculty and staff. Like the proposed project, Alternative C would include creek and watershed restoration projects, decentralized green infrastructure, and upgrades to UC Berkeley's storm drain system, which would reduce stormwater runoff, as well as be required to comply with applicable regulations pertaining to stormwater. Because of this, Alternative C would result in *similar* impacts pertaining to stormwater infrastructure when compared to the proposed project. In addition, like the proposed project, Alternative C would not include increased use of natural gas facilities because of UC Berkeley's policies to not include natural gas in new development, and therefore not result in greater impacts pertaining to natural gas facilities. However, because of increased development, Alternative C would result in *greater* overall water demand, more wastewater and solid waste generation, and more electrical and telecommunications demand, than the proposed project. While Alternative C would result in *similar* impacts related to stormwater and natural gas infrastructure, because of the increased demands on water, wastewater, solid waste, and electrical and telecommunications infrastructure, impacts to utilities and service systems under Alternative C would be *greater* than those of the proposed project.

As Housing Projects #1 and #2 would not change under Alternative C, impacts to utilities and service systems under Housing Projects #1 and #2 would be *similar* to the proposed project. However, overall impacts to utilities and service systems under Alternative C would be *greater* than those of the proposed project.

6.5.2.18 WILDFIRE

As described in Chapter 5.18, Wildfire, of this Draft EIR, the proposed project would result in significant and unavoidable impacts, even with implementation of Mitigation Measures WF-2, WF-3, WF-4, and WF-5. The proposed project would not substantially impair an adopted emergency response or emergency evacuation plan.

While increased remote learning and working opportunities, and reduced parking would be intended to lower VMT under Alternative C, these would not have any bearing on wildfire impacts. However, physical development, particularly in high fire risk areas such as within the SRA or Very High FHSZ, under Alternative C would potentially result in wildfire-related impacts.

Development under Alternative C would be the same as that under the proposed project, but with increased development within the Clark Kerr Campus and the City Environs Properties. While the majority of the City Environs Properties are outside of the SRA or Very High FHSZ as well as currently developed and surrounded by existing development, the Clark Kerr Campus is within the Local Responsibility Area Very High FHSZ. The Clark Kerr Campus is also at the base of the East Bay Hills at the wildland urban interface (WUI). An increase in the number of people occupying and living in this area could, therefore, increase wildfire risks by exposing people or structures to significant risks such as downslope landslides as a result of post-fire instability, or by exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be the *same* when compared to the proposed project. However, at the program level, because Alternative C would result in increased development overall, impacts from wildfire risks under Alternative C would be *greater* when compared to the proposed project.

6.5.3 RELATIONSHIP OF ALTERNATIVE C TO THE PROJECT OBJECTIVES

Alternative C would result in the same development program for the LRDP Update as the proposed project, with the addition of increased remote learning and working opportunities; reduced parking with zero net new parking spaces; and additional housing for faculty and staff provided in the Clark Kerr Campus and the City Environs Properties, in order to reduce VMT, which would in turn also reduce GHG emissions and impacts related to air quality, GHG emissions, and noise. Therefore, Alternative C would still be able to meet all of the project objectives, while also enhancing objectives for increasing housing stock for faculty and staff; furthering UC Berkeley's sustainability goals; prioritizing mobility system improvements; minimizing private vehicle access and maximizing other modes to decrease carbon emissions, congestion, and parking demand; and planning for a more resilient UC Berkeley campus.

Housing Projects #1 and #2 would not change under Alternative C and would therefore still be able to meet all of the project objectives for these project components.

Overall, Alternative C would meet all of the proposed project's objectives. See Section 6.7.2, Objectives Comparison Summary, for a complete listing of the project objectives and a comparison of the objectives by project alternative.

6.6 ALTERNATIVE D: INCREASED FACULTY AND STAFF HOUSING

6.6.1 DESCRIPTION

Under Alternative D, the Increased Faculty and Staff Housing Alternative, the proposed LRDP Update would include an additional 1,000 beds for faculty and staff within the Hill Campus East and the Clark Kerr Campus. The Hill Campus East would absorb an additional 600 beds and 400 additional beds would be included under redevelopment within the Clark Kerr Campus. While no specific sites have been selected for development on the Hill Campus East for this alternative, it is assumed that any new development would be located in close proximity to existing development and infrastructure. Other development, such as increased academic life and campus life square footage, under the proposed project would remain the same under Alternative D. Table 6-5, Forecasted Net Growth Comparison of the Proposed Project and Alternative D, shows the difference between the net growth projections of the proposed project compared to Alternative D. Under Alternative D, the development programs for Housing Projects #1 and #2 would remain the same as under the proposed project.

6. ALTERNATIVES TO THE PROPOSED PROJECT

TABLE 6-5 FORECASTED NET GROWTH COMPARISON OF THE PROPOSED PROJECT AND ALTERNATIVE D

Category	Proposed Project	Alternative D: Increased Faculty and Staff Housing	Change between the Proposed Project and Alternative D
LRDP Update			
Residential Beds			
Hill Campus West	0	0	-
Hill Campus East	0	600	600 more residential beds
Clark Kerr Campus	2,364	2,764	400 more residential beds
City Environs Properties	9,367	9,367	-
Total Residential Beds ^a	11,731	12,731	1,000 more residential beds
Academic Life Square Feet	2,284,588	2,284,588	-
Campus Life Square Feet	906,539	906,539	-
Student Population	8,492	8,492 ^b	-
Employees ^c	3,579	3,579 ^b	-
Parking Spaces ^d	1,240	1,240	-
Housing Project #1			
Residential Beds	770	770	-
Population	770	770	-
Employees	46	46	-
Parking	21	21	-
Housing Project #2			
Residential Beds	1,312	1,312	-
Population	1,312	1,312	-
Employees	57	57	-
Parking	11	11	-

Notes:

a. Includes residential beds listed under Housing Project #1 and Housing Project #2.

b. The undergraduate student population is mandated by the State and not individual UC System campuses. Therefore, the “projected” undergraduate number of students and employees, which are directly linked to the number of students, for buildout year 2036-37 would be the same for all the alternatives.

c. Employees are made up of both faculty and staff.

d. Includes parking spaces listed under Housing Project #1 and Housing Project #2.

Source: UC Berkeley, PlaceWorks, 2020.

The alternatives analysis assumes that all applicable mitigation measures recommended for the proposed project would apply to Alternative D.

6.6.2 IMPACT ANALYSIS BY ENVIRONMENTAL TOPIC

The potential environmental impacts associated with Alternative D when compared to the proposed project are described herein.

6.6.2.1 AESTHETICS

As described in Chapter 5.1, Aesthetics, of this Draft EIR, the proposed project would not result in any significant impacts related to scenic vistas, scenic views, or light and glare with the exception of the installation of solar arrays. Mitigation Measure AES-3 would be required to reduce impacts pertaining to light and glare from future solar array projects to a less-than-significant level.

Because the EIR Study Area where future development could occur is the same under both scenarios, potential future development under Alternative D that meets all the criteria of PRC Section 21099 would have the potential to be exempt from aesthetics evaluation and are not considered significant impacts on the environment. Like the proposed LRDP Update, aesthetics impacts under Alternative D would pertain only to projects in the EIR Study Area that would not meet all the PRC Section 21099 criteria. Similar to the proposed project, most development under Alternative D would still be expected to occur in existing urban areas primarily in the form of infill/intensification on sites either already developed and/or underutilized, where future development would have a lesser impact on scenic vistas when compared to development on an undeveloped area or isolated parcel away from existing development. In this way, aesthetic impacts are the same under both scenarios.

The development under Alternative D would be the same as under the proposed project, but with the addition of increased development within the Hill Campus East and the Clark Kerr Campus to accommodate more faculty and staff housing. As shown in Figure 5-1, Priority Development Areas and Transit Priority Areas, in Chapter 5, Environmental Analysis, the Hill Campus East is not located within a TPA and would therefore not be exempt under CEQA, from analysis of aesthetics impacts as other areas in the EIR Study Area would be. The Clark Kerr Campus is also largely not within a TPA.

While the proposed LRDP Update would include development on the Clark Kerr Campus, adding more residential units for faculty and staff under Alternative D would result in increased densification of this zone in comparison to the proposed project, which would in turn have more of a likelihood to result in aesthetics impacts due to potentially more dramatic visual changes, including increased building heights and resultant potential light and glare and scenic view impacts.

In addition, under Alternative D, new faculty and staff housing would be located in the Hill Campus East, which would remain primarily undeveloped under the proposed project, with the exception of a small increase in academic life space, utility infrastructure upgrades, and potential renewable energy additions. The Hill Campus East, composed largely of natural areas, is one of the more scenic areas within the EIR Study Area, with scenic vistas from the East Bay Hills west towards the San Francisco Bay, as well as serving as a backdrop to parts of the built environment. As such, increased development within this area could result in aesthetic impacts.

Applicable future projects under both scenarios would be subject to UC Berkeley's design review for consistency with UC Berkeley's policies governing scenic quality as described in Section 5.1.1.1, Regulatory Framework, in Chapter 5.1, Aesthetics. Alternative D would also incorporate updated CBPs AES-1, AES-3, AES-4, AES-5 that would reduce impacts pertaining to scenic quality and Mitigation Measure AES-3 which would reduce impacts pertaining to light and glare from future solar array projects.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be the *same* when compared to the proposed project. However, because Alternative D would result in increased development overall, particularly within the Clark Kerr Campus and the Hill Campus East, impacts to aesthetics under Alternative D would be *greater* when compared to the proposed project.

6.6.2.2 AIR QUALITY

As described in Chapter 5.2, Air Quality, implementation of the proposed project would conflict with the 2017 Clean Air Plan because student population growth is greater than forecast in the current LRDP. The proposed LRDP Update includes Mitigation Measure AIR-1 that requires UC Berkeley to coordinate early with the Association of Bay Area Government/ Metropolitan Transportation Commission to ensure that the Bay Area Air Quality Management District's (BAAQMD) Clean Air Plan accounts for UC Berkeley-related population changes. Because the population growth would be the same under both scenarios, the conflict with the 2017 Clean Air Plan would remain, and both projects would implement Mitigation Measure AIR-1, the impacts under Alternative D would be *similar* when compared to the proposed LRDP Update. Under the proposed project, the two housing projects were found to be consistent with the 2017 Clean Air Plan and impacts were therefore less than significant. Under Alternative D, there would be no change to the two projects and impacts would be the *same*.

The proposed project would result in significant and unavoidable impacts during the construction phase at the program level even with implementation of updated CBPs AIR-2 and AIR-3 to reduce fugitive dust, fugitive emissions, emissions from nonessential idling, and nitrogen oxide (NO_x) emissions and implementation of Mitigation Measure AIR-2.1 that requires construction equipment that meets the United States Environmental Protection Agency Tier 4 emissions standards or higher for certain projects. This is because site specific details are unknown. Accordingly, impacts would be similar under both scenarios. However, with implementation of updated CBPs AIR-2 and AIR-3 and Mitigation Measure AIR-2.1, AIR-2.2, and AIR-3, construction air quality and health risk impacts for Housing Projects #1 and #2 (which are unchanged in this alternative) were found to be less than significant. Under Alternative D, there would be more development potential throughout the EIR Study Area. Accordingly, impacts from construction air quality pollutants would be *similar* for the two housing projects and impacts from Alternative D would be *greater* when compared to the proposed project, because of the increased development program.

Buildout of the proposed LRDP Update would generate a substantial increase in reactive organic gas (ROG) emissions that exceeds the BAAQMD regional significance thresholds. The increase in NO_x and particulate matter (PM₁₀, and PM_{2.5}) emissions would not exceed the BAAQMD significance thresholds. Internal combustion associated with motor vehicle usage is the major source of ROGs, but other sources of ROGs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The vast majority (99 percent) of the emissions increase is associated with ROGs from consumer products and repainting buildings at the UC Berkeley campus. Faculty/staff commute VMT makes up the remaining 1 percent. Under Alternative D, more infill housing would occur thus *less* VMT and subsequent VMT emissions would occur when compared to the proposed project. Therefore, ROGs from VMT emissions would be *less* when compared to the proposed project. UC Berkeley would implement Mitigation Measure AIR-2 which require use of low or zero-ROG paints. This new Mitigation Measure would be implemented under both scenarios. Therefore, because more construction

would occur under Alternative D, impacts from these types of ROGs are assumed to be *greater* under Alternative D when compared to the proposed project. As described in Chapter 5.2, Air Quality, there are no measures available to reduce or regulate consumer products that release ROGs. Operational impacts from Housing Projects #1 and #2 would not exceed the thresholds for the release of air pollutants. Under Alternative D, the same amount of housing would be built on the two housing sites; thus, emissions from building operations would be the *similar* to the proposed project.

Under the proposed project health risks from construction activities in close proximity to receptors sensitive to toxic air contaminants would be significant and unavoidable at the program level even with implementation of Mitigation Measure AIR-3 and CBP AIR-3. This is because site specific details are unknown. While the infill nature and close proximity to receptors would be the same under both scenarios, more development potential would occur under Alternative D and therefore short-term construction health risks would be *greater* when compared to the proposed project. The two housing projects would have less than significant impacts related to construction health risks to off-site receptors. Because Housing Projects #1 and #2 would have the same level of construction, impacts are assumed to be the *similar* under Alternative D when compared to the proposed project.

The proposed project would pose no operational community risks or hazards, including carbon monoxide (CO) hotspots, and would not generate any substantial odors. Because more development would occur under Alternative D, impacts from operational health risks and substantial odors are assumed to be *greater* when compared to the proposed project.

Overall, Alternative D would result in reduced VMT emissions from infill development, greater construction related emissions, greater construction related and operational health risks, and greater operational ROG emissions from the 1,000 additional beds, air quality impacts under Alternative D would be *greater* when compared to the proposed project at the program level and *similar* for Housing Projects #1 and #2.

6.6.2.3 BIOLOGICAL RESOURCES

As discussed in Chapter 5.4, Biological Resources, of this Draft EIR, the impacts to biological resources from the proposed project are fully mitigable with implementation of updated CBPs BIO-1 through BIO-8, and CBP BIO-11, existing CBPs BIO-9 and BIO-10, and Mitigation Measure BIO-4. Potential future development under Alternative D would be the same as under the proposed project, but with additional development within the Clark Kerr Campus and the Hill Campus East to accommodate more faculty and staff housing.

Increased densification of the Clark Kerr Campus to accommodate more housing would result in the same impacts as under the proposed project, as this zone would already accommodate redevelopment under the proposed project. The same mitigation measures described for the proposed project would also apply under Alternative D, as the same areas would be developed. However, adding more housing to the Hill Campus East would require additional new development to this area, which is largely undeveloped, and could therefore result in additional impacts to biological resources. In particular, the Hill Campus East is also noted for its contribution to natural areas and habitat support within the EIR Study Area. While specific biological resource impacts would depend on where within the Hill Campus East development would occur,

new construction on currently undeveloped land would potentially *increase* impacts to biological resources when compared to the proposed project.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be *similar* when compared to the proposed project. However, at a program level development under Alternative D would result in *greater* impacts to biological resources when compared to the proposed project.

6.6.2.4 CULTURAL RESOURCES

As described in Chapter 5.4, Cultural Resources, of this Draft EIR, the proposed project would result in significant and unavoidable impacts, due to the potential of impacts on historic resources under the proposed LRDP Update as well as Housing Projects #1 and #2, even with implementation of updated CBP CUL-1, and Mitigation Measures CUL-1.1a through CUL-1.1b, and CUL-2.

Alternative D would include a similar development program as the proposed project, but with increased overall development. Development under Housing Projects #1 and #2 would be the same as under the proposed project. As explained in Chapter 5.4, there are existing archaeological, architectural, and historical, resources, and potentially unknown resources, in the EIR Study Area that could all be impacted by new demolition, inappropriate modification of buildings, or inappropriate new construction under the proposed project. The same would apply under Alternative D, including potential impacts to the Clark Kerr Campus Historic District. Like the proposed project, Alternative D would be subject to the procedures of conduct following the discovery of human remains set forth in California Health and Safety Code, Public Resources Code, and the California Code of Regulations. In addition, Alternative D would include the same CBPs and mitigation measures as under the proposed project.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be *similar* when compared to the proposed project. However, at the program level, because Alternative D would result in increased development overall, impacts to cultural resources under Alternative D would be *greater* when compared to the proposed project.

6.6.2.5 ENERGY

As described in Chapter 5.5, Energy, of this Draft EIR, the proposed project would not result in significant impacts related to energy efficiency or conflict with State or local plans for renewable energy or energy efficiency, and no mitigation measures are required. UC Berkeley's Campus energy infrastructure consists of several interconnected systems: electricity and natural gas provided by Pacific Gas and Electric Company (PG&E), and power to some sites provided by East Bay Community Energy (EBCE) and the University of California wholesale power program; on-site PV arrays; in-building chillers; a cogeneration plant on the Campus Park to produce steam and electricity that is powered by natural gas; and a steam plant on the Clark Kerr Campus. These conditions would be the same under both scenarios. In addition, the proposed project's upgrades to the existing cogeneration plant on the Campus Park that would result in an overall net increase in electricity demand, but with more efficient operations, and a net decrease in non-renewable natural gas use would occur under both scenarios. The proposed LRDP Update, as well as Alternative D, would also include upgrades to the existing electric network on the Campus Park, the Hill Campus West,

and the Hill Campus East. Furthermore, there are several potential renewable energy systems being considered such as installation of a solar PV system on the Hill Campus East that would be a Battery Energy Storage System, use of biogas fuel cells, development of a geothermal energy system, and integration of a mechanical energy storage system. Because the improvements realized under Alternative D, would be the same as the proposed project, energy efficiency impacts would be *similar* when compared to the proposed project.

All development that occurs in the State is required to comply with best management practices regulated in the 2019 California Green Building Code and 2019 Building Energy Efficiency Standards, which ensure new development would not result in the wasteful or inefficient use of energy. Further, new development would automatically be enrolled in renewable energy supplied by EBCE. Such requirements and enrollment in EBCE would be required under both the proposed project and under Alternative D. Additionally, neither the proposed project nor Alternative D would introduce a level of development and population growth that would be anticipated to necessitate the construction of new energy supply facilities or transmission infrastructure.

More infill development and development on Hill Campus East would occur under the Alternative D scenario, so energy consumption from construction would be *greater* when compared to the proposed project. For operation, the development of additional new energy efficient buildings, constructed on infill sites would also reduce VMT, therefore adverse energy efficiency impacts from infill development are assumed to be *less* under Alternative D when compared to the proposed project. However, new development on undeveloped land in the Hill Campus East would not be more energy efficient than redevelopment of an underdeveloped, infill site. Therefore, energy efficiency impacts would be *greater* under Alternative D when compared to the proposed project.

Ultimately, as described in the air quality discussion, energy use from VMT would be *less* under Alternative D because more infill development in PDAs and TPAs would occur when compared to the proposed project. Energy impacts for Housing Projects #1 and #2, which be the *same* as the proposed project as these projects are unchanged.

However, because this alternative includes new development on undeveloped land in Hill Campus East, it is assumed that adverse impacts related to energy efficiency would be *greater* under Alternative D when compared to the proposed project.

6.6.2.6 GEOLOGY AND SOILS

As described in Chapter 5.6, Geology and Soils, of this Draft EIR, the proposed project would result in less-than-significant impacts related to geology and soils, with implementation of CBPs GEO-1 through GEO-10 and Mitigation Measure GEO-5.

Future development under both Alternative D and the proposed project would be subject to the same federal, State, and UC Berkeley regulations that address and prevent hazards associated with geology, soils, and seismicity. Both the proposed project and development under Alternative D would encourage development in urbanized settings where there is less likelihood for impacts from geologic hazards to

occur. However, Alternative D would also include new development within the Hill Campus East to accommodate more faculty and staff housing where there is steeper, undeveloped terrain and a higher risk of geology- and soils-related hazards. Compliance with the same federal, State, and UC Berkeley regulations, though, as well as following CBPs GEO-1 through GEO-9, and implementation of Mitigation Measure GEO-5 would ensure that any potential development within this area would minimize potential geological impacts.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be the *same* when compared to the proposed project. However, at the program level, because Alternative D would result in increased development overall and in the Hill Campus East, impacts to geology and soils under Alternative D would be *greater* when compared to the proposed project.

6.6.2.7 GREENHOUSE GAS EMISSIONS

As described in Chapter 5.7, Greenhouse Gas Emissions, of this Draft EIR, the proposed project would result in a less-than-significant impact at the program level because implementation of the proposed LRDP Update would generate a decrease in GHG emissions at buildout from existing conditions.

While the proposed LRDP Update includes improvements to the cogeneration plan (see LRDP Goal 4.2), as shown in Table 5.7-7, UC Berkeley GHG Emissions, in Chapter 5.7, even without implementation of these plans, the proposed LRDP Update would generate a decrease in GHG emissions at buildout because of the increased fuel efficiency and improvements in vehicle engine technology along with reductions from statewide implementation of SB 100 renewable energy goals. Alternative D would result in a greater concentration of development and redevelopment in the PDA, TPA, and other urban portions of the EIR Study Area. Increasing development in these areas specifically would improve upon the net benefit gained from siting more intense infill near public transit and result in a higher percentage of transit users that may rely on automobiles (as opposed to walking or biking). Therefore, as a result of increasing infill development near transit, Alternative D would reduce vehicle trips, which are the major source of criteria GHG emissions from the proposed project. Therefore, because less VMT would occur under Alternative D, impacts related to GHG emissions would be *less* when compared to the proposed project.

No GHG emissions would be generated from energy use by Housing Projects #1 and #2 because new buildings would not utilize natural gas, and all electricity would be procured from 100 percent renewable sources in accordance with UC Berkeley sustainability policies. Compliance with the UC Berkeley sustainability policy results in decreased annual GHG emissions compared to existing conditions (either through UC Berkeley sustainability initiatives, offsets, or a combination of both). As a result, implementation of Housing Projects #1 and #2 would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions impacts. The same development would occur on these sites under both scenarios and therefore impacts would be *similar*.

Mitigation Measure GHG-2 identifies actions beyond the UC Sustainable Practices Policy and UC Berkeley Sustainability Plan that will achieve additional GHG reductions at UC Berkeley to ensure consistency with the state's long-term climate change goals under EO B-55-18. The mitigation also expands the UC's carbon neutrality commitments. Because Mitigation Measure GHG-2 will reduce Scope 3 GHG emissions resulting from implementation of the proposed LRDP Update to 67 percent below 2018 emissions levels by 2036 and

carbon neutral by 2045, the project would not conflict with the UC Berkeley's Carbon Neutrality goals. Alternative D would implement this mitigation measure and therefore, impacts would *similar* when compared to the proposed project.

Overall, impacts from GHG emissions under Alternative D would be *less* because more infill development would occur when compared to the proposed project, resulting in further reductions in VMT.

6.6.2.8 HAZARDS AND HAZARDOUS MATERIALS

As described in Chapter 5.8, Hazards and Hazardous Materials, of this Draft EIR, the proposed project would result in less-than-significant impacts related to hazards and hazardous materials, with no mitigation necessary. As discussed in Chapter 5.8 under impact discussion HAZ-4, there are sites within the EIR Study Area that are included on a list of hazardous materials sites. However, contamination at these sites has been fully characterized and remediated with local and regional agency oversight, with any potential residual contamination believed to pose no threat to human health and the environment. Implementation of CBPs HAZ-1 through HAZ-5 would ensure that UC Berkeley follows health and safety procedures and related programs to minimize any potential risks related to hazardous materials.

Under Alternative D, the development program and areas affected would not significantly change but would have increased development overall. The same federal, State, and UC Berkeley regulations and practices under the proposed project would apply under Alternative D, as well as the CBPs, in order to reduce any potential risks related to hazardous materials.

The proposed project was found to have a less-than-significant impact related to the routine transport, use, or disposal of hazardous waste, the release of hazardous waste, or the release of hazardous emissions or handling of hazardous materials in the proximity of an existing or proposed school. As further discussed in Chapter 5.8, Hazards and Hazardous Materials, the EIR Study Area is not located within an airport land use plan area for which potential future development could conflict, and implementation of the proposed project would not conflict with an adopted emergency response plan or emergency evacuation plan. Potential future development and construction of Housing Projects #1 and #2 that could occur in the EIR Study Area from implementation of the proposed project would be required to comply with all applicable federal, State, and UC Berkeley regulations and programs pertaining to hazards and hazardous materials. Development that would occur under Alternative D would be required to comply with the same regulations and programs to reduce risks related to hazardous materials. Therefore, Alternative D would have a *similar* impact when compared to the proposed project.

6.6.2.9 HYDROLOGY AND WATER QUALITY

As described in Chapter 5.9, Hydrology and Water Quality, of this Draft EIR, the proposed project would not result in any significant impacts related to hydrology and water quality and no mitigation measures are required. Compliance with existing regulations and procedures as well as CBP HYD-1, updated CBP HYD-2, CBPs HYD-3 and HYD-4, updated CBP HYD-5, and CBPs HYD-6 through HYD-13 would ensure that pre- and post-construction impacts to water quality would be less than significant. These regulations and procedures would be maintained under Alternative D.

Although Alternative D would result in more development overall, future development would largely occur within already urbanized areas similar to the proposed project and would connect to existing drainage systems already in place and be subject to the same existing federal, State, regional, and UC Berkeley regulations and policies relating to hydrology and water quality. Compliance with existing regulations would ensure that pre- and post-construction impacts to water quality would be minimized as future development occurs. However, additional new development under Alternative D would occur within the Hill Campus East, which is primarily undeveloped, and where there is steep terrain where development could potentially lead to drainage changes or erosion. This development though, would need to be sited and developed in compliance with the same regulations and policies as elsewhere throughout the EIR Study Area, as well as UC Berkeley's CBPs in order to minimize any potential impacts to hydrology and water quality. For example, as specified in CBP HYD-1, in Chapter 5.9, Hydrology and Water Quality, the UC Berkeley Office of Environment, Health & Safety would verify that the project complies with all applicable requirements and best management practices. In addition, as specified in CBP HYD-2, UC Berkeley would continue implementing urban runoff management in compliance with the National Pollutant Discharge Elimination System by implementing construction and post-construction control measures and best management practices required by project-specific Stormwater Pollution Prevention Plans.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be *similar* when compared to the proposed project. However, at the program level, because Alternative D would result in increased development overall, including residential development in the Hill Campus East, impacts related to hydrology and water quality under Alternative D would be *greater* when compared to the proposed project.

6.6.2.10 LAND USE AND PLANNING

As described in Chapter 5.10, Land Use and Planning, of this Draft EIR, the proposed project would not result in any significant impacts related to land use and planning and no mitigation measures are required. The proposed LRDP Update would implement CBP LU-1 to ensure potential future development would conform to the Physical Design Framework and updated CBP LU-2 to ensure that each individual project built in the Hill Campus West, Hill Campus East, or the City Environs Properties would be assessed to determine whether it could pose potential significant land use impacts not anticipated in the LRDP, and if so, the project would be subject to further evaluation under the California Environmental Quality Act (CEQA).

Alternative D would include a similar development program to the proposed project with increased development within the Clark Kerr Campus and additional development within the Hill Campus East in order to accommodate more faculty and staff housing. Increased development within the Clark Kerr Campus would not add areas of development not analyzed under the proposed project. This increased development would also not result in incompatible land uses as this zone allows for and is adjacent to existing residential land uses. Therefore, additional residential development within the Clark Kerr Campus would not result in land use impacts in comparison to the proposed project.

Alternative D would also result in new residential development within the Hill Campus East. UC Berkeley's land use policies include preservation zones to protect the campus' most significant open spaces within the

Physical Design Framework, which include portions of the Hill Woodlands. While “those woodlands that remain west of LBNL should be maintained as a preservation zone”,¹ this does not rule out the entire Hill Campus East for development. In general, development within this area would be required to comply with UC Berkeley policies that are intended to reduce environmental effects, such as maintenance of preservation zones. Similar to the proposed project, future development projects under Alternative D would go through UC Berkeley’s design review process for consistency with applicable UC Berkeley plans and policies, including those adopted for the purpose of avoiding or mitigating an environmental effect, as well as adhere to UC Berkeley’s CBPs LU-1 and LU-2. Finally, under the proposed project, Goal 2.3 of the proposed LRDP Update would be to “maintain the Hill Campus East as a resource for research, education, and energy resilience and focus potential development on suitable sites, while managing and reducing wildfire risk.” As the overarching land use document for the EIR Study Area, development within this area would be required to comply with this and other goals and would not be ruled out so long as the overall Hill Campus East area still provides wildfire management, energy resilience, and open space. Therefore, impacts under Alternative D would be *similar* to those under the proposed project.

6.6.2.11 NOISE

As described in Chapter 5.11, Noise, of this Draft EIR, the proposed project would result in a less-than-significant impact related to operational noise with implementation of CBP NOI-1. Impacts related to vibration would also be less than significant with implementation of Mitigation Measure NOI-2. However, impacts related to construction noise would be significant and unavoidable even with implementation of CBP NOI-2 and NOI-3, and Mitigation Measure NOI-1. At the program level this is because of the unknown nature of the construction activities associated with future projects that may occur near noise-sensitive receptors with respect the project type, equipment list, time of day, phasing and overall construction duration. Significant and unavoidable impacts during construction were found for Housing Projects #1 and #2 because of the height of the nearby sensitive receptors and the infeasibility of constructing sound walls beyond the second story to mitigate the impact from construction equipment.

While UC Berkeley is not required to comply with local regulations and standards for noise, such as city codes, for the purposes of CEQA, UC Berkeley uses noise standards from the applicable municipal code in which the noise-sensitive receptor is located; therefore, potential future development from implementation of the proposed project would be subject to the standards of the Berkeley Municipal Code or the Oakland Municipal Code, depending on location. As specific uses are proposed for particular sites, project-level design, permitting, and/or environmental review would serve to ensure that individual uses would comply with the noise regulations. Future development under Alternative D would also be subject to these applicable standards. Because *more* construction would occur, noise and vibration from construction would be *greater* under Alternative D when compared to the proposed project.

Alternative D would result in *more* development throughout the EIR Study Area within PDAs and TPAs, but the same amount of new construction would occur on the sites for Housing Projects #1 and #2. Because this alternative would create more infill housing it is assumed to generate *less* VMT. Accordingly, this

¹ University of California, Berkeley, 2009, *Physical Design Framework*, page 44.

alternative is assumed to generate *less* noise from mobile sources when compared to the proposed project. Because the same amount of development on the sites for Housing Projects #1 and #2 would occur, construction noise would be *similar* to the proposed project. Ultimately, the reduced noise impacts from the long-term operational phase would result in *less* noise impacts under Alternative D when compared to the proposed project.

6.6.2.12 POPULATION AND HOUSING

As described in Chapter 5.12, Population and Housing, of this Draft EIR, with implementation of Mitigation Measure POP-1, (which establishes a population reporting protocol to support regional planning projections), impacts associated with indirect and direct population growth would be less than significant. On a project level, impacts related to regional population projections are less than significant for Housing Projects #1 and #2.

Also described in Chapter 5.12, the displacement of housing units could occur as UC Berkeley implements the proposed LRDP Update over the buildout horizon of the project. With the addition of Mitigation Measure POP-2 requiring compliance with the UC Relocation Policy. Impacts related to the displacement of a substantial number of people or housing were found to be less than significant at the project level for Housing Project #1. The site for Housing Project #2 is currently undeveloped and no housing displacement would occur under the proposed project or Alternative D. Under Alternative D, displacement impacts would be *similar* to the proposed project, as the development program for both sites is the same.

Implementation of the proposed project focuses on infill development in PDAs and TPAs, which is in alignment with the regional planning framework of *Plan Bay Area*. Further, the proposed project is the overriding policy document at UC Berkeley that plans for space to accommodate population growth that is reasonably foreseeable through 2036-37. Implementation of the proposed project would guide the increased development of 11,731 beds on the UC Berkeley campus through 2036-37. Alternative D would have the same population growth as the proposed project and would still exceed the regional projections like the proposed project. Like the proposed project, Alternative D would include the updated policy framework of the proposed project that would ensure adequate planning occurs to accommodate the future population increase and future development to extended buildout year through 2036-37. Therefore, impacts under Alternative D would be *similar* when compared to the proposed project with respect to planned population growth.

Alternative D would have the same population growth as the proposed project in the EIR Study Area through 2036-37 but would result in more beds to accommodate the growth. Therefore, potential population growth under Alternative D would occupy less non-UC Berkeley housing when compared to the proposed project. Therefore, impacts under Alternative D would be *less* when compared to those of the proposed project.

In summary, because Alternative D would have the same growth potential as the proposed project but would result in more residential development to accommodate the residential growth, impacts related to population and housing would be *less* when compared to the proposed project.

6.6.2.13 PUBLIC SERVICES

As described in Chapter 5.13, Public Services, of this Draft EIR, impacts under the proposed project to fire protection services, police services, and libraries were found to be less than significant. Impacts to the Berkeley Unified School District (BUSD) were found to be significant and unavoidable with implementation of Mitigation Measure PS-5 because the current capacity of the BUSD is unavailable and therefore unknown for the preparation of this evaluation. Housing Projects #1 and #2 do not generate housing that can accommodate families with school-aged children, thus, impacts to BUSD are less than significant.

Under Alternative D, the UC Berkeley population would not differ than under the proposed project. However, there would be increased development compared to the proposed project. As discussed in Chapter 5.13, because increased density can result in greater demand on fire protection services, increased density of the built environment under Alternative D would therefore result in *greater* impacts to fire protection services.

While the UC Berkeley population would not change under Alternative D in comparison to the proposed project, additional development within the city of Berkeley could result in a greater overall city of Berkeley population. This would result in potentially *more* demand on police services. In addition, the increased population in the city of Berkeley could result in greater impacts on City of Berkeley library services when compared to the proposed project. This would result in potentially *greater* impacts to library services when compared to the proposed project.

While there would be increased faculty and staff housing development under Alternative D, *similar* to the proposed project annual reporting on UC Berkeley housing projections would be required through implementation of Mitigation Measure PS-5. Therefore, under Alternative D, impacts to school services would be *similar* to that of the proposed project.

Because Housing Projects #1 and #2 would not change under Alternative D, impacts to public services from these project components would be *similar* to the proposed project.

Overall, while school services would have *similar* impacts under Alternative D to the proposed project, because of greater potential impacts to police services, fire protection services, and library services, impacts under Alternative D would be *greater* when compared to the proposed project.

6.6.2.14 PARKS AND RECREATION

As described in Chapter 5.14, Parks and Recreation, of this Draft EIR, the proposed project would not result in significant impacts to parks and recreation facilities in the communities adjoining the UC Berkeley campus, as increased demand from future development under the proposed LRDP Update would be met by existing and proposed UC Berkeley facilities. The proposed project would also not result in substantial adverse physical impacts associated with the provision of new or physically altered parks facilities; the need for new or physically altered parks facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for parks services, nor would it increase the use of existing neighborhood and

regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Alternative D would result in increased overall development, but only in terms of faculty and staff housing. While this would add more housing within the EIR Study Area, it would not change the total UC Berkeley projected population that was used in Chapter 5.14 to analyze future demands on parks and recreational services. Because additional housing would be allocated to the Clark Kerr Campus and the Hill Campus East, Alternative D would result in additional housing taking the space of some recreational facilities or open space within the Hill Campus East, and potentially within the Clark Kerr Campus which currently includes recreational facilities on-site. This would potentially reduce the number of parks and amount of overall recreational space provided on the UC Berkeley campus. However, because UC Berkeley provides ample space for parks and recreation, this would not significantly alter the demand on other parks and recreational facilities. In addition, additional housing development within the Hill Campus East under Alternative D would be located in close proximity to existing development and infrastructure, which would reduce the amount of open space altered by development. Therefore, because there would be minimal changes to parks and recreation under Alternative D in comparison to the proposed project, the LRDP program under Alternative D would result in *similar* impacts to parks and recreation.

Housing Projects #1 and #2 would not change under Alternative D, and therefore impacts to parks and recreation under these two project components would be *similar* to that of the proposed project. Overall, impacts to parks and recreation under Alternative D would be *similar* when compared to the proposed project.

6.6.2.15 TRANSPORTATION

As described in Chapter 5.15, Transportation, of this Draft EIR, the proposed project would not conflict with a governing document/policy addressing the circulation system with implementation of Mitigation Measure TRAN-1 and updated CBP TRAN-1 and TRAN-3, and existing CBP TRAN-2 and TRAN-4. The proposed project would be consistent with CEQA Guidelines Section 15064.3(b) and no mitigation is required. Due to the increased the potential for buildings that are 100 feet or more, a pedestrian hazard from wind events could occur. Mitigation Measure TRAN-3 would require wind evaluation for these buildings once final exterior design is completed. This is a significant and unavoidable impact that can be reduced using building design refinements if feasible.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be *similar* when compared to the proposed project.

Alternative D would include the expanded and enhanced goals, principles, and objectives of the proposed project that would improve the transportation system in the EIR Study Area designed to increase multi-modal transportation and enhance bicycle and pedestrian access and safety. As listed in Chapter 3, Project Description, of this Draft EIR, the proposed LRDP Update includes goals that would support the expansion of TDM programs and a reduction in single-occupant vehicle travel. Revised and enhanced objectives would prioritize pedestrian travel and more sustainable and zero carbon transportation solutions. Because Alternative D would include more infill development that is specifically for faculty and staff in a TPA,

Alternative D would result in less VMT when compared to the proposed project. At the program level, for this reason, impacts under Alternative D are assumed to be *less* when compared to the proposed project.

6.6.2.16 TRIBAL CULTURAL RESOURCES

As explained in Chapter 5.16, Tribal Cultural Resources, of this Draft EIR, while there are no identified TCRs that would be impacted by the proposed project, there remains the potential to uncover previously unknown TCRs during construction within the EIR Study Area. Similar to the proposed project, development under Alternative D would be required to comply with applicable regulations as described in Chapter 5.16, such as the Native American Graves Protection and Repatriation Act, California Health and Safety Code, Senate Bill 18, and Assembly Bill 52, as well as updated CBP CUL-1 and Mitigation Measure TCR-1 described in Chapter 5.16. Housing Projects #1 and #2 would not change under Alternative D and would therefore result in similar impacts to TCRs. However, under Alternative D, overall development throughout the EIR Study Area would be *greater* than that under the proposed project.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be *similar* when compared to the proposed project. However, at the program level, because Alternative D would result in increased development overall, impacts to TCRs under Alternative D would be *greater* when compared to the proposed project.

6.6.2.17 UTILITIES AND SERVICE SYSTEMS

As described in Chapter 5.17, Utilities and Service Systems, of this Draft EIR, impacts to water, wastewater, stormwater, and electrical, natural gas, and telecommunications utility infrastructure under the proposed project were found to be less than significant with the ongoing implementation of CBP USS-1 through USS-8. No mitigation measures are required.

The proposed project would result in increased demands on these utilities. Alternative D would be similar to the proposed project but include additional residential space for faculty and staff. Like the proposed project, Alternative D would include creek and watershed restoration projects, decentralized green infrastructure, and upgrades to UC Berkeley's storm drain system, which would reduce stormwater runoff, as well as be required to comply with applicable regulations pertaining to stormwater. Because of this, Alternative D would result in *similar* impacts pertaining to stormwater infrastructure when compared to the proposed project. In addition, like the proposed project, Alternative D would not include increased use of natural gas facilities because of UC Berkeley's policies to not include natural gas in new development, and therefore not result in greater impacts pertaining to natural gas facilities. However, because of increased development throughout the EIR Study Area, Alternative D would result in *greater* overall water demand, more wastewater and solid waste generation, and more electrical and telecommunications demand, than the proposed project. While Alternative D would result in *similar* impacts related to stormwater and natural gas infrastructure, because of the increased demands on water, wastewater, solid waste, and electrical and telecommunications infrastructure, impacts to utilities and service systems under Alternative D would be *greater* than those of the proposed project.

As Housing Projects #1 and #2 would not change under Alternative D, impacts to utilities and service systems under Housing Projects #1 and #2 would be *similar* when compared to the proposed project. However, overall impacts to utilities and service systems under Alternative D would be *greater* than those of the proposed project.

6.6.2.18 WILDFIRE

As described in Chapter 5.18, Wildfire, of this Draft EIR, the proposed project would result in significant and unavoidable impacts, even with implementation of Mitigation Measures WF-2, WF-3, WF-4, and WF-5. The proposed project would not substantially impair an adopted emergency response or emergency evacuation plan.

Development under Alternative D would be the same as that under the proposed project, but with increased development within the Clark Kerr Campus and the Hill Campus East. As discussed under Alternative D, increased development within the Clark Kerr Campus in comparison to the proposed project could result in increased wildfire risks. In addition, the Hill Campus East, as described in Chapter 5.18, Wildfire, has increased wildfire risks compared to the other EIR Study Area zones due to its location within the Very High FHSZ, heavy vegetation, and steep terrain. Under Alternative D, increased development in the Hill Campus East would result in more development with the potential, from slope and other factors, to exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire; require the installation or maintenance of associated infrastructure that may exacerbate fire risk; or expose people or structures to significant risks, including downslope flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes.

No changes to Housing Projects #1 and #2 would occur and therefore, impacts would be the *same* when compared to the proposed project. However, at the program level, because Alternative D would result in increased development overall, impacts from wildfire risks under Alternative D would be *greater* when compared to the proposed project.

6.6.3 RELATIONSHIP OF ALTERNATIVE D TO THE PROJECT OBJECTIVES

Alternative D would result in the same program for the LRDP Update as the proposed project, with additional housing for faculty and staff provided in the Clark Kerr Campus and the Hill Campus East. While development would be added to the Hill Campus East, the majority of the Hill Campus East would still be maintained as valuable open space and natural habitat. Alternative D would therefore still comply with the project objective to maintain the Hill Campus East as a resource for research, education, and energy resilience, with potential development focused on suitable sites. In addition, the rest of the development program under the proposed LRDP Update would remain the same under Alternative D as it is under the proposed project, and therefore Alternative D would be able to meet all of the project objectives, while also enhancing objectives for increasing housing stock for faculty and staff.

Housing Projects #1 and #2 would not change under Alternative D and would therefore still be able to meet

all the project objectives for these project components.

Overall, Alternative D would meet all the proposed project's objectives. See Section 6.7.2, Objectives Comparison Summary, for a complete listing of the project objectives and a comparison of the objectives by project alternative.

6.7 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

In addition to the discussion and comparison of impacts of the proposed project and the alternatives, Section 15126.6 of the CEQA Guidelines requires that an “environmentally superior” alternative be selected and the reasons for such a selection be disclosed. In general, the environmentally superior alternative is the alternative to the proposed project that would be expected to generate the least number of significant impacts. Identification of the environmentally superior alternative is an informational procedure and the alternative to the proposed project selected may not be the alternative to the proposed project that best meets the goals or needs of UC Berkeley. Because CEQA Guidelines Section 15126.6(c) requires an evaluation of a reasonable range of alternatives to the proposed project, the proposed project under consideration cannot be identified as the environmentally superior alternative. Additionally, in accordance with CEQA Guidelines Section 15126.6(e)(2), if the environmentally superior alternative is the “No Project” alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

6.7.1 IMPACT COMPARISON SUMMARY

Table 6-6, Comparison of Impacts of the Proposed Project and the Project Alternative, compares the relative impacts of each of the alternatives compared to the proposed project. The impacts of each alternative are classified as greater, less than, or essentially similar to (or comparable to) the level of impacts associated with the proposed project. The following summarizes the conclusions in Table 6-6:

Alternative A: No Project

- **LRDP Update:** Alternative A, in comparison to the proposed project, would result in *reduced* environmental impacts from the proposed LRDP Update related to aesthetics, air quality, biological resources, cultural resources, public services, tribal cultural resources, utilities and service systems, and wildfire. It would result in *greater* impacts related to energy, GHG emissions, noise, population and housing, parks and recreation, and transportation. Impacts related to geology and soils, hazards and hazardous materials, hydrology and water quality, and land use and planning would be *similar* under Alternative A and the proposed project.
- **Housing Projects:** Alternative A, in comparison to the proposed project, would result in *less* environmental impacts from both Housing Projects #1 and #2 related to air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services, tribal cultural resources, and utilities and service systems, and *greater* impacts from both Housing Project #1 and #2 related to energy, GHG emissions, parks and recreation, population and housing, and transportation. Impacts from Housing Projects #1 and #2 related to aesthetics and wildfire would be *similar* under Alternative A and the proposed project.

Alternative B: Reduced Development Program

- **LRDP Update:** Alternative B, in comparison to the proposed project, would result in *reduced* environmental impacts related to aesthetics, air quality, biological resources, cultural resources, public services, tribal cultural resources, and utilities and service systems. It would result in *greater* impacts related energy, GHG emissions, noise, population and housing, and transportation. Impacts related to geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, parks and recreation, and wildfire would be *similar* under Alternative B and the proposed project.
- **Housing Projects:** Alternative B, in comparison to the proposed project, would result in *reduced* environmental impacts from both Housing Projects #1 and #2 related to air quality, biological resources, public services, tribal cultural resources, and utilities and service systems, and *greater* impacts from both Housing Projects #1 and #2 related to energy, GHG emissions, population and housing, and transportation. Impacts from Housing Projects #1 and #2 related to aesthetics, cultural resources, geology and soils, hydrology and water quality, land use and planning, noise, parks and recreation, and wildfire would be *similar* under Alternative B and the proposed project.

Alternative C: Reduced Vehicle Miles Traveled

- **LRDP Update:** Alternative C, in comparison to the proposed project, would result in less environmental impacts from the proposed LRDP Update related to energy, GHG emissions, noise, population and housing, and transportation. It would result in greater impacts related to aesthetics, air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, public services, tribal cultural resources, utilities and service systems, and wildfire. Impacts from the proposed LRDP Update related to hazards and hazardous materials, land use and planning, and parks and recreation would be similar under Alternative C and the proposed project.
- **Housing Projects:** Alternative C does not propose changes to the housing project components and would result in impacts similar to those from both the Housing Project #1 and #2 in all topic areas.

Alternative D: Increased Faculty and Staff Housing

- **LRDP Update:** Alternative D, in comparison to the proposed project, would result in *less* environmental impacts from the proposed LRDP Update related to GHG emissions, noise, population and housing, and transportation. It would result in *greater* impacts from the proposed LRDP Update related to aesthetics, biological resources, cultural resources, energy, geology and soils, hydrology and water quality, public services, tribal cultural resources, utilities and service systems, and wildfire. Impacts from the proposed LRDP Update related to hazards and hazardous materials land use and planning and parks and recreation would be *similar* under Alternative D and the proposed project.
- **Housing Projects:** Alternative D proposes no changes to the housing project components and would result in impacts *similar* to those of the Housing Project #1 and #2 in all topic areas.

Therefore, as shown in Table 6-6, based on a greater number of reduced impacts compared to increased impacts between the alternatives, Alternative A would be the environmentally superior alternative. Since Alternative A is the No Project Alternative, the next environmentally superior alternative would be Alternative C. Both Alternatives C and D would result in fewer impacts than Alternative B overall, but Alternative C would result in fewer impacts pertaining to energy, while Alternative D would result in greater impacts pertaining to energy.

TABLE 6-6 COMPARISON OF IMPACTS OF THE PROPOSED PROJECT AND THE PROJECT ALTERNATIVES

Chapter # and Topic	Proposed Project ^a			Alternative A: No Project			Alternative B: Reduced Development Program			Alternative C: Reduced Vehicle Miles Traveled			Alternative D: Increased Faculty and Staff Housing		
	LRDP	HP1	HP2	LRDP	HP1	HP2	LRDP	HP1	HP2	LRDP	HP1	HP2	LRDP	HP1	HP2
5.1 Aesthetics	LTS/M	NI	NI	<	=	=	<	=	=	>	=	=	>	=	=
5.2 Air Quality	SU	LTS	LTS	<	<	<	<	<	<	>	=	=	>	=	=
5.3 Biological Resources	LTS/M	LTS/M	LTS/M	<	<	<	<	=	=	>	=	=	>	=	=
5.4 Cultural Resources	SU	SU	SU	<	<	<	<	=	=	>	=	=	>	=	=
5.5 Energy	LTS	LTS	LTS	>	>	>	>	>	>	<	=	=	>	=	=
5.6 Geology and Soils	LTS/M	LTS	LTS	=	=	=	=	=	=	>	=	=	>	=	=
5.7 Greenhouse Gas Emissions	LTS/M	LTS	LTS	>	>	>	>	>	>	<	=	=	<	=	=
5.8 Hazards and Hazardous Materials	LTS	LTS	LTS	=	<	<	=	=	=	=	=	=	=	=	=
5.9 Hydrology and Water Quality	LTS	LTS	LTS	=	<	<	=	=	=	>	=	=	>	=	=
5.10 Land Use and Planning	LTS	LTS	LTS	=	<	<	=	=	=	=	=	=	=	=	=
5.11 Noise	SU	SU	SU	>	<	<	>	>	>	<	=	=	<	=	=
5.12 Population and Housing	LTS/M	LTS	LTS	>	<	=	>	>	>	<	=	=	<	=	=
5.13 Public Services	SU	LTS	LTS	<	<	<	<	<	<	>	=	=	>	=	=
5.14 Parks and Recreation	LTS	LTS	LTS	>	>	=	=	=	=	=	=	=	=	=	=
5.15 Transportation	SU	SU	SU	>	>	>	>	>	>	<	=	=	<	=	=
5.16 Tribal Cultural Resources	LTS/M	LTS/M	LTS/M	<	<	<	<	=	=	>	=	=	>	=	=
5.17 Utilities and Service Systems	LTS	LTS	LTS	<	=	=	<	<	<	>	=	=	>	=	=
5.18 Wildfire	SU	LTS	LTS	<	<	<	=	=	=	>	=	=	>	=	=

Notes: LRDP = proposed LRDP Update; HP1 = Housing Project #1; HP2 = Housing Project #2

a: The impacts listed in this column represent the highest significance determination for each respective standards of significance.

Impact Acronyms:

NI No Impact
LTS Less than Significant without Mitigation
LTS/M Less than Significant with Mitigation
SU Significant and Unavoidable

Symbols:

< Less impact in comparison to the proposed project
= Similar impacts in comparison to the proposed project
> Greater impact in comparison to the proposed project

6.7.2 OBJECTIVES COMPARISON SUMMARY

The project objectives presented in Chapter 3, Project Description, of this Draft EIR, are listed in Table 6-7, Comparison of Objectives of the Proposed Project and the Project Alternatives. As described in Chapter 3, the primary purpose of the proposed LRDP Update is to set forth a framework for future development across UC Berkeley properties, while the primary purpose of Housing Projects #1 and #2 is to provide housing and campus life facilities for students and faculty. Table 6-7, Comparison of Objectives of the Proposed Project and the Project Alternatives, illustrates a comparison of the project alternatives to the project objectives as described in the discussions on the relationship to each alternative previously described in Sections 6.3.3 through 6.6.3, above. The objectives in Table 6-3 are organized by the three project components: proposed LRDP Update, Housing Project #1 and Housing Project #2. The symbols in the table show a “+” sign where the objective is fully met, a “–” where the objective is not met, and a combination of “+ / –” where the objective is partially met. As shown, Alternative A, No Project, would not meet many of the project objectives, the growth allocations under this alternative would not include adequate levels of housing to meet projected population increases, and would therefore not meet objectives focused on increasing mobility options, and reducing single vehicle trips and promoting residential development to provide a more sustainable UC Berkeley campus. The other alternatives meet most of the objectives in varying degrees based on the development potential for each alternative.

TABLE 6-7 COMPARISON OF OBJECTIVES OF THE PROPOSED PROJECT AND THE PROJECT ALTERNATIVES

Objectives	Alternative A: No Project	Alternative B: Reduced Development Program	Alternative C: Reduced Vehicle Miles Traveled	Alternative D: Increased Faculty and Staff Housing
LRDP Update				
Maintain the Campus Park as the central location for academic life, research, and student life uses as well as student services, and provide a range of adaptable and multipurpose spaces required to promote excellence and leadership in teaching, research, and public service consistent with UC Berkeley’s mission and Strategic Plan. Prioritize administrative and student life facilities in locations adjacent to but off of the Campus Park.	+ / –	+	+	+
Improve the existing housing portfolio by providing additional new and renovated safe, secure, accessible, and high-quality housing units/beds for undergraduate and graduate students, faculty, and staff required to support a vital inclusive and intellectual community and promote full engagement in campus life in support of the Chancellor’s Housing Initiative.	–	+ / –	+	+
Improve the existing campus life spaces and provide new accessible, inclusive, and dynamic indoor and outdoor campus life spaces to provide an interconnected natural and built environment with a shared sense of community, interaction, and wellness.	+ / –	+ / –	+	+

TABLE 6-7 COMPARISON OF OBJECTIVES OF THE PROPOSED PROJECT AND THE PROJECT ALTERNATIVES

Objectives	Alternative A: No Project	Alternative B: Reduced Development Program	Alternative C: Reduced Vehicle Miles Traveled	Alternative D: Increased Faculty and Staff Housing
Maintain natural areas as well as generous natural and built open spaces on the Campus Park and the Clark Kerr Campus.	+	+	+	+
Maintain the Hill Campus East as open space that is managed to reduce wildfire risk and as a resource for research and energy resilience, focusing potential development on suitable sites.	-	+	+	+
Plan every new project (i.e., renovation, strategic infill/additions, and new construction) to support the optimal investment of resources, meet space needs and improve space utilization, and address deferred maintenance.	+ / -	+	+	+
Further UC Berkeley as a leader in sustainability and meet and strive to exceed UC Berkeley sustainability goals and the goals of the UC Sustainable Practices Policy, Carbon Neutrality Initiative, and Seismic Safety policy.	+ / -	+	+	+
Take advantage of UC Berkeley's urban location to prioritize mobility system improvements that promote an accessible, efficient, sustainable, and safe campus.	+ / -	+	+	+
Minimize private vehicle access in the Campus Park and prioritize transit, bicycle, and pedestrian access to and across the Campus Park to decrease carbon emissions, congestion, and parking demand.	-	+	+	+
Prioritize improvements and create clearly defined routes for bicycle, pedestrian, transit, and micromobility networks to enhance UC Berkeley campus connectivity and safety, to make navigation more intuitive and inclusive, and to ensure access to the campus by all UC Berkeley constituents.	-	+	+	+
Plan for a more resilient UC Berkeley campus to protect human health and safety, maintain essential infrastructure services and operational continuity, preserve investment in the physical campus, cultivate adaptable natural systems.	-	+	+	+
Maintain and enhance the image and experience of the UC Berkeley campus and support the continuing evolution of the UC Berkeley campus's notable and historic landscapes and architecture.	+	+	+	+
Enhance the connectivity between UC Berkeley and surrounding areas through continued support of community partnerships and public programming in areas of shared interest, and the design of campus edges and UC Berkeley-owned properties in the community.	+ / -	+	+	+
Maintain, support, and enhance UC Berkeley's status as an internationally renowned, 21st-century, public	+ / -	+	+	+

6. ALTERNATIVES TO THE PROPOSED PROJECT

TABLE 6-7 COMPARISON OF OBJECTIVES OF THE PROPOSED PROJECT AND THE PROJECT ALTERNATIVES

Objectives	Alternative A: No Project	Alternative B: Reduced Development Program	Alternative C: Reduced Vehicle Miles Traveled	Alternative D: Increased Faculty and Staff Housing
research-intensive university and center for scientific and academic advancement by expanding its graduate and professional schools, policy institutes, research programs, laboratories, and institutions.				
Housing Project #1				
Redevelop an underutilized UC Berkeley property to provide safe, secure, accessible, and high-quality student housing to help meet the student housing needs of UC Berkeley in support of the Chancellor's Housing Initiative; the project will target providing housing for transfer students, as this group typically has the most difficulty securing UC Berkeley housing.	-	+ / -	+	+
Create accessible student housing with no residential parking that is adjacent to the Campus Park to reduce vehicle miles traveled and associated air quality, greenhouse gas emissions, and noise to help achieve the goals of the UC Carbon Neutrality Initiative.	-	+ / -	+	+
Provide sustainability features to support meeting or exceeding the UC system and UC Berkeley sustainability goals, such as providing rooftop solar PV panels; installing sun shades above all east-, south-, and west-facing apartment windows; generating no new net stormwater runoff; and landscaping with native and/or adaptive and drought-resistant plant materials.	-	+	+	+
Provide essential amenities and campus life facilities to foster a vibrant, convenient, and well-served student community with a variety of indoor uses and outdoor spaces that provide connections between the natural and built environment for a shared sense of community, interaction, and wellness.	-	+	+	+
Provide an architecturally distinctive project with high quality materials and ground level landscaping that will contribute positively to the City Environs Properties in Downtown Berkeley and support the continuing evolution of the UC Berkeley campus's notable and historic landscapes and architecture.	-	+	+	+
Enhance the vibrancy of the City Environs Properties and the sense of community enjoyed by UC Berkeley affiliates and City of Berkeley residents by providing a pedestrian-friendly project that includes housing, open space and greenery, office space, and activated ground floor uses, which may include neighborhood retail.	-	+	+	+

TABLE 6-7 COMPARISON OF OBJECTIVES OF THE PROPOSED PROJECT AND THE PROJECT ALTERNATIVES

Objectives	Alternative A: No Project	Alternative B: Reduced Development Program	Alternative C: Reduced Vehicle Miles Traveled	Alternative D: Increased Faculty and Staff Housing
Housing Project #2				
Redevelop and revitalize a UC Berkeley property to provide safe, secure, high quality, and high density student housing to help meet the student housing needs of UC Berkeley in support of the Chancellor's Housing Initiative.	-	+ / -	+	+
Provide affordable and supportive housing to the greater Berkeley and Bay Area community.	-	+ / -	+	+
Create accessible student housing with no residential parking and affordable and supportive housing with limited employee parking that is in close proximity to the Campus Park to reduce vehicle miles traveled and associated air quality, greenhouse gas emissions, and noise to help achieve the goals of the UC Carbon Neutrality Initiative.	-	+ / -	+	+
Provide sustainability features to support meeting or exceeding the UC system and UC Berkeley sustainability goals, such as providing rooftop solar PV panels on each building, installing lighting controls to reduce energy use, using only LED light sources, and landscaping with native and/or adaptive and drought-resistant plant materials.	-	+	+	+
Provide essential amenities and campus life facilities to foster a vibrant, convenient, and well-served student community with a variety of indoor uses and outdoor, landscaped open space that provides connections between the natural and built environment for a shared sense of community, interaction, and wellness.	-	+	+	+
Provide an architecturally distinctive project with high quality materials and ground level landscaping that will contribute positively to the City Environs Properties in South Berkeley and support the continuing evolution of the UC Berkeley campus's notable and historic landscapes and architecture.	-	+	+	+
Preserve healthy, mature trees on the project site to the greatest extent feasible.	+	+	+	+
Symbols:				
+ Meets the objective				
- Does not meet the objective				
+/- Partially meets the objective				

6. ALTERNATIVES TO THE PROPOSED PROJECT

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7. CEQA-Required Assessment Conclusions

This chapter provides an overview of the impacts of the proposed project based on the analyses presented in Chapters 5.1 through 5.18 of this Draft EIR. The topics covered in this chapter include impacts found not to be significant, impacts found to be significant and unavoidable, growth-inducing impacts, and significant irreversible changes to the environment. For a more detailed analysis of the proposed project's environmental effects and the proposed mitigation measures to minimize significant impacts, see Chapter 5, Environmental Analysis, and its subchapters 5.1 through 5.18, of this Draft EIR.

7.1 IMPACTS FOUND NOT TO BE SIGNIFICANT

CEQA Guidelines Section 15128, Effects Not Found to Be Significant, allows environmental issues to be “scoped out” if there is no likelihood of a significant impact, and they do not need to be analyzed further in the EIR. This section explains the reasoning for the determination that the proposed project would have no effect within an entire environmental topic or under specific criteria within an environmental topic. As shown below, there would be no impacts to agriculture, forestry, or mineral resources as a whole; therefore, these topics are not evaluated in Chapter 5. Furthermore, there would be no impacts to some of the criteria for aesthetics, biological resources, geology and soils, hazards and hazardous materials, noise, and transportation. These specific criteria are identified in the corresponding subsection of this chapter and are not required to be evaluated in Chapter 5.

7.1.1 AESTHETICS

Impacts related to aesthetics are evaluated in Chapter 5.1. As described in Chapter 5, Environmental Analysis, CEQA Section 21099(d)(1), states, “Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site within a transit priority area [TPA] shall not be considered significant impacts on the environment.” Some UC Berkeley properties considered in this Draft EIR are in TPAs identified by the Association of Bay Area Governments and Metropolitan Transportation Commission. The TPAs are the Downtown Berkeley Bay Area Rapid Transit (BART) station, on Shattuck Avenue, between Center Street and Alston Way; and AC Transit bus service on Shattuck Avenue, University Avenue, Telegraph Avenue, College Avenue, and Bancroft Way/Durant Avenue, where specific lines run on at least 15-minute headways during morning and evening peak periods. All of the Campus Park, portions of the Clark Kerr Campus and the West Hill Campus, and the majority of UC Berkeley properties within the City Environs Properties are within a TPA, including both Housing Projects #1 and #2. Figure 5-1, Priority Development Areas and Transit Priority Areas, shows the TPAs in the EIR Study Area.

Accordingly, consistent with CEQA Section 21099, no significant aesthetic impacts can be made in this environmental analysis for development in the TPA which is a residential, mixed-use residential, or

employment-center project on a qualified infill site. Housing Project #1 and Housing Project #2 meet all three criteria; therefore, aesthetic and parking impacts for these projects are not discussed in this EIR. Potential future development projects under the proposed LRDP Update, if and when they are carried out, would be exempt under CEQA Section 21099 if they are in a TPA and on infill sites with residential, mixed-use residential, or employment-generating uses.

The following standard of significance is not evaluated in this EIR:

Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

This standard has been screened out from further evaluation because the EIR Study Area is not on or within the viewshed of a State scenic highway.¹ Regional access to UC Berkeley is provided by Interstates 80 and 580, and State Routes 24 and 13. None of these highways is a designated or presently eligible scenic route. Therefore, no impact would occur regarding substantial damage to scenic resources within a State scenic highway, and this issue is not discussed further in this EIR.

Other issues pertaining to aesthetics and the proposed project are discussed in Chapter 5.1, Aesthetics, of this Draft EIR.

7.1.2 AGRICULTURE AND FORESTRY RESOURCES

This EIR does not analyze impacts to agriculture and forestry resources because the EIR Study Area is primarily in an urbanized setting, and approval and implementation of the proposed LRDP Update and construction and operation of the proposed Housing Projects #1 and #2 would have no impact on agriculture and forestry resources. Maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Natural Resources Agency categorize land in the EIR Study Area as Urban and Built-Up Land, and “Other Land,” and the EIR Study Area does not have farmland or grazing land.² Neither do the cities of Berkeley and Oakland have land zoned for farmland or timberland production.^{3, 4} Portions of the EIR Study Area have designated Open Space, but not State or national forest lands. Consequently, there would be no impacts to agriculture and forestry resources, and this issue is not discussed further in this EIR.

¹ California Department of Transportation California Scenic Highways Program, Scenic Highway System Lists, List of eligible and officially designated State Scenic Highways, <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>, accessed February 28, 2020.

² California Resources Agency, Farmland Mapping and Monitoring Program. Alameda County Important Farmland 2016, and Contra Costa County Important Farmland 2016, accessed February 26, 2020.

³ City of Oakland, 2018, Zoning and Estuary Policy Plan Maps, https://cao-94612.s3.amazonaws.com/documents/Zoning_EPP_Map_20181211.pdf, accessed February 27, 2020.

⁴ City of Berkeley, 2014, Land Use Zoning Districts, https://www.cityofberkeley.info/uploadedFiles/IT/Level_3_-_General/Zoning%20Map%2036x36%2020050120.pdf, accessed on accessed February 27, 2020.

7.1.3 BIOLOGICAL RESOURCES

Impacts to biological resources are evaluated in Chapter 5.3. The following standard of significance is not evaluated in this EIR:

Conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or State habitat conservation plan?

No local, regional, or State conservation plans have been approved that encompass the EIR Study Area, including the sites for Housing Projects #1 and #2. No further analysis regarding this threshold and the proposed project is required. The US Fish and Wildlife Service's Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay addresses six federally designated species, including the federally threatened Alameda whipsnake and pallid manzanita, and four species that are California Species of Special Concern, specifically the Contra Costa manzanita, Mt. Diablo bird's-beak, Mt. Diablo buckwheat, and Berkeley kangaroo rat (presumed extinct). The federal Endangered Species Act requires preparation of recovery plans for listed species unless such a plan would not promote the conservation of a particular species. Recovery plans describe actions considered necessary for the conservation of the species, establish criteria for down-listing or delisting species, and estimate time and cost for implementing recovery measures. As currently proposed, the Draft Recovery Plan extends into the upper watershed of the Hill Campus East and includes actions affecting existing and potential development as well as vegetation management strategies. The Draft Recovery Plan emphasizes the use of fire as a method to facilitate ecosystem restoration and improved habitat quality for target plant and animal species. The Final Recovery Plan has not been prepared, and it is uncertain whether it will encompass a portion of the Hill Campus East if and when it is approved. Accordingly, this issue is not discussed further in this EIR.

Other issues pertaining to biological resources and the proposed project are discussed in Chapter 5.3, Biological Resources, of this Draft EIR.

7.1.4 GEOLOGY AND SOILS

Impacts related to geology and soils are evaluated in Chapter 5.6. The following standard of significance is not evaluated in this EIR:

Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater?

The proposed project would not include the use of septic tanks or alternative wastewater disposal systems. Therefore, no impact would occur regarding soil capability to adequately support the use of septic tanks or alternative wastewater disposal systems, and this issue is not discussed further in this EIR.

Other issues pertaining to geological hazards and the proposed project are discussed in Chapter 5.6, Geology and Soils, of this Draft EIR.

7.1.5 HAZARDS AND HAZARDOUS MATERIALS

Impacts related to hazards and hazardous materials are evaluated in Chapter 5.8. The following standard of significance is not evaluated in this EIR:

For a project within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people living or working in the project area?

The EIR Study Area is not within an airport land use plan or within two miles of an airport.^{5, 6} The nearest public airport is the Oakland International Airport, roughly ten miles south of the planning area.^{7, 8} Therefore, no impact would occur regarding hazards related to the proposed project's location within an airport land use plan area or within two miles of a public airport or public use airport, and this issue is not discussed further in this EIR.

Other issues pertaining to hazards and hazardous materials and the proposed project are discussed in Chapter 5.8, Hazards and Hazardous Materials, of this Draft EIR.

7.1.6 MINERAL RESOURCES

Mineral resources are not evaluated in this EIR. The California Geological Survey classifies lands into aggregate and mineral resource zones based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act of 1974. These mineral resource zones identify whether known or inferred significant mineral resources are present in areas. There are no areas in the EIR Study Area with development potential that contain mineral resources where there is adequate information indicating significant mineral deposits or the high likelihood of significant mineral deposits.^{9, 10, 11} Therefore, there would be no impact with regard to the loss of a valuable mineral resource, and this issue is not discussed in this EIR.

⁵ Contra Costa County Airport Land Use Commission, 2000, Contra Costa County Airport Land Use Compatibility Plan. <https://www.contracosta.ca.gov/DocumentCenter/View/851/Cover-Introduction-and-County-wide-Policies?bidId=>, accessed February 27, 2020.

⁶ Alameda County, 2019, California Airport Land Use Commissions, <https://www.acgov.org/cda/planning/generalplans/airportlandplans.htm>, accessed February 27, 2020.

⁷ AirNav, 2016, Browse Airports, United States of America, California, <http://www.airnav.com/airports/us/CA>, accessed February 27, 2020.

⁸ Google Map data, 2020, Airports near Berkeley, California, <https://www.google.com/maps/search/airport/@37.849113,-122.3818286,10.75z>, accessed February 27, 2020.

⁹ California Geological Survey, 2018, Aggregate Sustainability in California, https://www.conservation.ca.gov/cgs/Documents/MS_052_California_Aggregates_Map_201807.pdf, accessed February 27, 2020.

¹⁰ California Department of Conservation, 2016, Mines Online, <https://maps.conservation.ca.gov/mol/index.html>, accessed February 27, 2020.

¹¹ California Department of Conservation, 1982, Mineral Land Classification Map Special Report 146 Plates 2.7, 2.19, 2.20.

7.1.7 NOISE

Noise-related impacts are evaluated in Chapter 5.11. The following standard of significance is not evaluated in this EIR:

For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

As stated in Section 7.1.5, the EIR Study Area is not in an airport land use plan area; within two miles of a public airport or public use airport; or in the vicinity of a private airstrip. Therefore, no impact would result from noise hazards due to proximity to airports, and this issue is not discussed further in this EIR.

Other issues pertaining to noise and the proposed project are discussed in Chapter 5.11, Noise, of this Draft EIR.

7.1.8 TRANSPORTATION

Transportation-related impacts are evaluated in Chapter 5.15. As described in Chapter 5, Environmental Analysis, pursuant to CEQA Guidelines Section 15064.3(b)(1), projects within half a mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less-than-significant transportation impact. Accordingly, transportation impacts related to vehicle miles traveled (VMT) from potential future development in the TPA, including the proposed Housing Projects #1 and #2, are presumed to be less than significant. Accordingly, no quantified VMT analysis is presented in Chapter 5.15 for the two housing projects.

Note that a VMT estimate was prepared for Housing Projects #1 and #2 for use in the GHG emissions analysis in Chapter 5.7, Greenhouse Gas Emissions, and can be found in Appendix M, Transportation Data, of this Draft EIR.

Other issues pertaining to transportation and the proposed project are discussed in Chapter 5.15, Transportation, of this Draft EIR.

7.2 SIGNIFICANT AND UNAVOIDABLE IMPACTS

Section 15126.2(a) of the CEQA Guidelines requires that “Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects.” Section 15126.2(c) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures.

The proposed project includes both the long-range effects of implementing the proposed LRDP Update and the short-term effects of the construction and operation of the proposed Housing Projects #1 and #2.

7. CEQA-REQUIRED ASSESSMENT CONCLUSIONS

Chapter 2, Executive Summary, contains Table 2-2, Significant Impacts and Mitigation Measures for the Long Range Development Plan; Table 2-3, Significant Impacts and Mitigation Measures for Housing Project #1; and Table 2-4, Significant Impacts and Mitigation Measures for Housing Project #2, which summarize the impacts, mitigation measures, and levels of significance with and without mitigation for each project component. Though actions in the proposed project, including the UC Berkeley's Continuing Best Practices (CBPs), and mitigation measures, where feasible, would reduce the level of impact to less than significant, the following impacts would remain significant and unavoidable, as detailed in Chapters 5.1 through 5.18 of this Draft EIR:

TABLE 7-1 SIGNIFICANT AND UNAVOIDABLE IMPACTS BY PROJECT COMPONENT

Impact Statement by Chapter # and Environmental Topic	LRDP Update	Housing Project #1	Housing Project #2
5.2 Air Quality (AQ)			
AIR-1: Student population growth is greater than forecast in the current LRDP, potentially conflicting with the assumptions in the 2017 Clean Air Plan.	SU	--	--
AIR-2.1: Construction activities associated with the proposed LRDP Update could generate fugitive dust and construction equipment exhaust that exceed the Bay Area Air Quality Management District average daily construction thresholds.	SU	--	--
AIR-2.2: Buildout of the proposed LRDP Update would result in a substantial increase in ROG emissions from use of consumer products and repainting building at UC Berkeley that would contribute to the ozone nonattainment designations of the San Francisco Bay Area Air Basin (project and cumulative).	SU	--	--
AIR-3: Construction activities associated with potential future development projects accommodated under the proposed LRDP Update could expose nearby receptors to substantial concentrations of toxic air contaminants.	SU	--	--
5.4 Cultural Resources (CUL)			
CUL-1.1: Future development under the proposed LRDP Update has the potential to permanently impact historic resources by demolishing or renovating historic buildings in a manner that is not in conformance with the Secretary of the Interior's Standards for Rehabilitation.	SU	--	--
CUL-1.2: Housing Project #1 would demolish the University Garage (1952 Oxford Street), a designated City of Berkeley Historical Landmark and eligible for listing in the California Register, which would result in a substantial adverse change to a historic resource.	--	SU	--
CUL-1.3: Housing Project #2 would demolish and reconfigure People's Park, a designated City of Berkeley Historical Landmark, which would result in a substantial adverse change to a historic resource	--	--	SU
CUL-1.5: The design of Housing Project #2 may impair the integrity of one or more of the 10 historical resources in the immediate vicinity of People's Park through incompatible design.	--	--	SU
CUL-4: The proposed project, in combination with past, present, and reasonably foreseeable projects, would result in significant cumulative impacts with respect to cultural resources.	SU	SU	SU

TABLE 7-1 SIGNIFICANT AND UNAVOIDABLE IMPACTS BY PROJECT COMPONENT

Impact Statement by Chapter # and Environmental Topic	LRDP Update	Housing Project #1	Housing Project #2
5.11 Noise (NOI)			
NOI-1: Noise from construction equipment could expose sensitive receptors to noise that exceeds the thresholds of significance.	SU	SU	SU
NOI-3: The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to construction noise.	SU	SU	SU
5.13 Public Services (PS)			
PS-5: Student population growth contributed to Berkeley Unified School District from construction of housing under the LRDP Update that could support families has the potential to result in the need for new or modified school facilities, the construction of which could result in environmental impacts.	SU	--	--
PS-6: Student population growth contributed to Berkeley Unified School District from construction of housing under the LRDP Update, in combination with past, present, and reasonably foreseeable projects, has the potential to result in the need for new or modified school facilities, the construction of which could result in environmental impacts.	SU	--	--
5.15 Transportation (TRAN)			
TRAN-3: New buildings and structures that are 100 feet or more in height, based on final exterior design, could create wind hazards at the pedestrian (ground) level.	SU	SU	SU
TRAN-5: The proposed project, in combination with past, present, and reasonably foreseeable projects, could result in a significant cumulative impact with respect to wind hazards at the pedestrian (ground) level.	SU	SU	SU
5.18 Wildfire (WF)			
WF-2: Development under the proposed LRDP Update could include an increase in academic life space, utility infrastructure upgrades, and energy resilience projects within the Hill Campus East, which is in a Very High FHSZ and has steep terrain and heavy vegetation. Development within this area could exacerbate wildfire risks.	SU	--	--
WF-3: The proposed LRDP Update could involve the installation or maintenance of infrastructure such as roads, fuel breaks, emergency water sources, power lines, or other utilities associated with potential development within the Very High FHSZ, including with the potential addition of a solar array installation in the Hill Campus East. Construction and operation of these improvements could exacerbate fire risk through construction and maintenance activities and/or through the introduction of additional electrical infrastructure.	SU	--	--
WF-4: The proposed LRDP Update could involve development within the Hill Campus East, which is in a Very High FHSZ, contains steep terrain, and is largely undeveloped, and which abuts existing residential areas. Therefore, potential development could expose people or structures to downslope landslides as a result of postfire slope instability.	SU	--	--
WF-5: Potential development under the proposed LRDP Update could, in combination with other surrounding and future projects in the SRA or Very High FHSZ, result in cumulative impacts associated with the exposure of project occupants to pollutant concentrations from a wildfire or uncontrolled spread of a wildfire due to slope, prevailing winds, or other factors; the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or exposure of people or structures to significant risks including downslope landslides as a result of postfire slope instability.	SU	--	--

7.3 GROWTH INDUCEMENT

Section 15126.2(e) of the CEQA Guidelines requires that an EIR discuss the ways in which a proposed project could foster economic or population growth or the construction of additional housing in the surrounding environment, either directly or indirectly. Typical growth-inducing factors might be the extension of urban services or transportation infrastructure to a previously unserved or underserved area, or the removal of major barriers to development.

This section evaluates the proposed project's potential to create such growth inducements. As Section 15126.2(e) requires, "It must not be assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment." In other words, negative impacts associated with growth inducement occur only where the projected growth would cause significant adverse environmental impacts.

Growth-inducing impacts fall into two general categories: direct or indirect. Direct growth-inducing impacts are generally associated with providing urban services to an undeveloped area. Indirect, or secondary, growth-inducing impacts consist of growth induced in the region by additional demands for housing, goods, and services associated with the population increase caused by or attracted to a new project.

7.3.1 DIRECT IMPACTS

Implementation of the proposed project would induce growth by encouraging and increasing the development potential in the EIR Study Area, as shown in Table 3-1, Proposed LRDP Update Buildout Projections, in Chapter 3, Project Description, of this Draft EIR. This EIR evaluates the proposed buildout potential through the EIR buildout horizon academic year of 2036–37. The proposed buildout potential would add up to 8,096,249 square feet of residential, academic life space, campus life space, and parking, and 11,731 beds for students, faculty/staff, and supportive housing residents. Buildout would accommodate a projected increase in UC Berkeley population of 5,068 additional undergraduate students, 3,424 additional graduate students, and 3,579 additional faculty and staff. As previously described in this chapter and in Chapter 5, Environmental Analysis, the EIR Study Area includes areas in priority development areas (PDA) and TPAs. PDAs and TPAs were identified through a regional effort initiated by the Association of Bay Area Governments and Metropolitan Transportation Commission in 2008 to link planned development with regional land use and transportation planning objectives. In addition to the TPAs described above, parts of the EIR Study Area are in the Downtown and Southside/Telegraph Avenue PDAs. Proposed development would occur in an already urbanized setting, and would not extend growth to previously undeveloped areas.

The growth envisioned under the proposed LRDP Update would result in regional benefits by promoting growth that encourages less automobile dependence and supports regional transit systems, which could have associated air quality and greenhouse gas emissions benefits. Encouraging infill growth in designated areas would help to reduce development pressures on lands outside the EIR Study Area.

7.3.2 INDIRECT IMPACTS

The proposed project is considered growth inducing because it encourages new growth within the EIR Study Area. However, development in this area would primarily consist of infill development and densification of underutilized sites. Infrastructure is largely in place, and further development would be required to comply with State regulations, UC Berkeley policies, CBPs, and applicable standards for public services and utilities. Implementation of the proposed LRDP Update would include infrastructure improvements necessary to serve the EIR Study Area but would not extend services to adjacent areas that could be developed as a result of the new infrastructure. Therefore, secondary effects associated with this growth do not represent a new significant environmental impact which has not already been addressed in the individual resource chapters of this EIR. Additional population and employment growth would occur incrementally over a period of approximately 15 years.

7.4 SIGNIFICANT AND IRREVERSIBLE CHANGES

Section 15126.2(d) of the CEQA Guidelines requires an EIR to discuss the extent to which the proposed project would commit nonrenewable resources to uses that future generations would not be able to reverse. The three CEQA-required categories of irreversible changes are discussed below.

7.4.1 CHANGES IN LAND USE THAT COMMIT FUTURE GENERATIONS

As described in detail in Chapter 3, Project Description, of this Draft EIR, the proposed project would increase densification throughout the UC Berkeley campus through the buildout horizon academic year of 2036–37. It would not change existing roadways nor properties outside of the EIR Study Area, and it would develop primarily on existing UC Berkeley property, on infill sites, and in already urbanized areas. Potential future development under the proposed LRDP Update would increase the density and heights of UC Berkeley buildings to accommodate a growing UC Berkeley population and more efficiently use space. Such future development would be primarily located on infill sites and in already urbanized areas, although some limited development would be on undeveloped sites that UC Berkeley owns, including limited development in the Hill Campus East, but this area would remain primarily devoted to open space, recreation, and resource conservation. When future development under the proposed project occurs, it would not be feasible to return the developed land to its existing (pre-project) condition. Therefore, there is potential that some of the development allowed under the proposed project would lead to irreversible changes in land use.

7.4.2 IRREVERSIBLE DAMAGE FROM ENVIRONMENTAL ACCIDENTS

Irreversible changes to the physical environment from accidental release of hazardous materials associated with development and operation activities would have adverse effects on the environment or public health due to the nature or quantity of material released during an accident and the receptors exposed to that release. Demolition and construction activities associated with development of the proposed project, and operation of future development projects, would involve some risk for environmental accidents. However, compliance with the applicable regulations and implementation of continuing best practices (CBPs) HAZ-1, HAZ-2, HAZ-3, HAZ-4, and HAZ-5, as discussed in Chapter 5.8, Hazards and Hazardous Materials, would reduce this potential impact to a less-than-significant level. Therefore, irreversible damage is not expected to result from the adoption and implementation of the proposed project.

7.4.3 LARGE COMMITMENT OF NONRENEWABLE RESOURCES

Implementation of development allowed under the proposed project would result in the commitment of limited, renewable resources such as lumber and water. In addition, development allowed by the proposed project would irretrievably commit nonrenewable resources for the construction of buildings and associated infrastructure. These nonrenewable resources include mined minerals such as sand, gravel, steel, lead, copper, and other metals. Future buildout under implementation of the proposed project also represents a long-term commitment to the consumption of fossil fuels, natural gas, and gasoline. Increased energy demands would be used for construction, lighting, heating, and cooling of residences, and transportation of people within, to, and from the UC Berkeley campus. However, as shown in Chapter 5.5, Energy; Sections 5.17.1, Water, and 5.17.4, Solid Waste, of Chapter 5.17, Utilities and Service Systems; and in Chapter 5.15, Transportation, of this Draft EIR, several regulatory measures, UC Berkeley policies, and CBPs encourage energy and water conservation, alternative energy use, waste reduction, alternatives to automotive transportation, and green building.

Potential future development under the proposed project would be required to comply with all applicable building and design requirements, including those in the California Code of Regulations Title 24 relating to energy conservation. In addition, in compliance with UC Berkeley policies, new buildings and major modifications would be required to achieve a minimum Leadership in Energy and Environmental Design (LEED) Silver certification and meet the whole-building energy performance targets or outperform California Building Code energy-efficiency standards by at least 20 percent, and renovations would be required to receive a minimum LEED for Interior Design and Construction (ID+C) certification.

Therefore, though the construction and operation of future development under the proposed project would involve the use of nonrenewable resources, compliance with applicable standards and regulations and implementation of CBPs would reduce the use of nonrenewable resources to the maximum extent practicable.

8. Organizations and Persons Consulted

Lead Agency

The Regents of the University of California

Authors & Persons Consulted

University of California, Berkeley

- Capital Strategies
- Office of Environment, Health & Safety
- Facilities Services and Campus Operations
- Supply Chain Management
- Office of Sustainability
- Sustainability & Carbon Solutions
- UC Police Department
- Parking & Transportation
- Government and Community Relations and Local Government and Community Relations
- Communications and Public Affairs
- Residential & Student Service Programs
- Office of Legal Affairs

University of California, Office of the President

- Physical and Environmental Planning
- Transportation & Logistics

Other Agencies

- Association of Bay Area Governments/Metropolitan, Transportation Commission Planning
- City of Berkeley, Department of Planning & Development
- City of Oakland, Bureau of Planning
- Berkeley Unified School District, Public Information Office
- East Bay Municipal Utilities District, Water Distribution Planning Division

Consultants

Environmental Impact Report

PlaceWorks	EIR Prime Consultant
Alan Kropp and Associates.....	Geotechnical Consultant
Archeo-Tec	Consulting Archaeologists
Architectural Resources Group	Architectural Preservation Consultants
CPP, Inc.	Wind Engineering & Air Quality Consultants
Environmental Collaborative.....	Biological Resources Consultant
Fehr & Peers.....	Transportation Consultants

LRDP Update

Sasaki Associates, Inc	Master Planning Consultants
Page	LRDP Planning and Environmental Graphics Consultant
Arup.....	MEP Engineers
Biddison Hier	Education Consultants
Fehr & Peers.....	Transportation Planners & Engineers
Forell/Elsesser Engineers, Inc	Seismic Consultant
Page & Turnbull.....	Historic Resource Consultants
PGA Design	Heritage Landscape Architects
Sherwood Design Engineers.....	Civil Engineers



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