

A large aerial photograph of the UC Davis Sacramento Campus at sunset. The image shows a complex of modern buildings with large windows, some of which are illuminated from within. The sky is a mix of orange, yellow, and blue, with some clouds. In the foreground, there is a large, curved, paved area with some greenery and a few palm trees. The overall scene is a mix of urban and natural elements.

UC DAVIS

**PUBLIC DRAFT
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Sacramento Campus 2020 Long Range Development Plan Update

Volume 1:
2020 LRDP Update
Draft Supplemental Environmental Impact Report

PUBLIC DRAFT

UC DAVIS SACRAMENTO CAMPUS 2020 LONG RANGE DEVELOPMENT PLAN UPDATE

VOLUME 1: 2020 LRDP UPDATE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

PREPARED FOR:

University of California Davis
Campus Planning and Environmental Stewardship
University of California, One Shields Avenue
Davis, CA 95616
Contact: Matt Dulcich, AICP
Director of Environmental Planning
530.304.3898

PREPARED BY:

ICF
980 9th Street, Suite 1200
Sacramento, CA 95814
Contact: Lindsay Christensen
916.737.3000

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Volume 1: 2020 LRDP Update

Executive Summary

ES.1 Introduction

This Executive Summary is provided in accordance with the California Environmental Quality Act (CEQA) Guidelines Section 15123. It contains an overview of the programmatic analysis of the University of California, Davis (UC Davis) Sacramento Campus 2020 Long Range Development Plan Update (2020 LRDP Update), which is contained in Volume 1 of the Draft Supplemental Environmental Impact Report (EIR). This Supplemental EIR is a program EIR. As stated in the State CEQA Guidelines Section 15123(a), “[a]n EIR shall contain a brief summary of the proposed actions and its consequences. The language of the summary should be as clear and simple as reasonably practical.” State CEQA Guidelines Section 15123(b) states, “[t]he summary shall identify: 1) each significant effect with proposed mitigation measures and alternatives that would reduce or avoid that effect; 2) areas of controversy known to the Lead Agency, including issues raised by agencies and the public; and 3) issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects.” Accordingly, this summary includes a brief synopsis of the 2020 LRDP Update and plan alternatives, environmental impacts and mitigation, areas of known controversy, and issues to be resolved during environmental review. Table LRDP-ES-1 presents the summary of potential environmental impacts, their level of significance without mitigation measures, the mitigation measures, and the levels of significance following the implementation of mitigation measures.

A separate executive summary has been prepared for the Aggie Square Phase I project, which is contained in Volume 2 of this Supplemental EIR. This project is a component of the 2020 LRDP Update and is evaluated at a project-level of detail in Volume 2.

ES.2 Summary Description of the 2020 LRDP Update

The UC Davis Sacramento Campus is approximately 146 acres in size and approximately 2.5 miles southeast of downtown Sacramento, and 17 miles east of the UC Davis main campus in Davis. Land uses surrounding the campus site include offices, public institutions, urban corridor, low-density suburban neighborhoods, and a high-density traditional neighborhood.

The 2020 LRDP Update involves modifications to the land use plan established as part of the 2010 LRDP to support potential growth and development. In 2010, with approval of the UC Davis Sacramento Campus LRDP, the University of California certified the 2010 LRDP Final EIR. UC Davis anticipates that under the 2020 LRDP Update, the on-campus population could grow over the next 20 years to 21,200, which is approximately 1,481 over the 2010 LRDP projection for 2025. UC Davis also anticipates growth up to 7.07 million gross square feet by 2040, which is approximately 499,202 gross square feet above what was analyzed in the 2010 LRDP Final EIR.

ES.3 Objectives of the 2020 LRDP Update

The planning principles of the 2020 LRDP Update are structured around ensuring appropriate facility adjacencies; improving campus open space and landscape character; providing convenient access to and within the campus; improving pedestrian connections throughout the campus; providing attractive campus entries and edges; and continuing to plan and operate a sustainable campus. Based on these planning principles, UC Davis has developed the following CEQA project objectives for the 2020 LRDP Update.

- Provide additional state-of-the-art inpatient and outpatient capacity to keep pace with community health care needs and to support the UC Davis Health System's teaching, research, and community engagement missions.
- Facilitate growth in student enrollment and the implementation of major educational initiatives, such as the School of Public Health, to address the existing and projected need for health care professionals and other highly trained, multidisciplinary professionals in the State of California.
- Support growth in workforce development and lifelong learning, including the Continuing and Professional Education program.
- Provide the facilities and infrastructure required to facilitate continued growth of the research enterprise at the Sacramento Campus, especially to foster interaction and collaboration between all campus programs and disciplines.
- Create an expansive and inclusive community of people focused on advancing health, contributing to the well-being of people in the communities we serve, propelling a more diverse and healthier economy, and expanding the positive impact of UC Davis Health through more expansive partnerships.
- Support access to jobs and services to a more diverse population, including providing housing and transportation opportunities and community-serving uses.
- Address the constraints to intellectual exchange and collaboration resulting from the dispersed offsite locations of some of the UC Davis Health System educational and research programs.
- Address seismic and other code-related deficiencies in aging buildings, replacing them with state-of-the-art facilities for health care and health care-related research.
- Implement sustainable site design and building design practices to support ongoing implementation of the UC Sustainable Practices Policy.

ES.4 Summary of Environmental Impacts and Mitigation Measures

Pursuant to State CEQA Guidelines Section 15382, a significant effect on the environment is defined as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the plan, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." Chapter 3 of this Supplemental EIR describes in detail the significant environmental impacts that would result from implementation of the 2020 LRDP Update. Table LRDP-ES-1 summarizes the environmental impacts and mitigation measures

discussed in these chapters. Chapters 4 and 5 provide a discussion of cumulative impacts and other CEQA considerations, respectively.

ES.5 Significant and Unavoidable Environmental Impacts

Section 21100(b)(2)(A) of the State CEQA Guidelines provides that an EIR shall include a detailed statement setting forth “in a separate section: any significant effect on the environment that cannot be avoided if the project is implemented.” Accordingly, this section provides a summary of significant environmental impacts of the plan that cannot be mitigated to a less-than-significant level.

Chapter 3, *Existing Environmental Setting, Impacts, and Mitigation*, provides a description of the potential environmental impacts of the plan and recommends various mitigation measures to reduce impacts, to the extent feasible. Chapter 4, *Cumulative Impacts*, determines whether the incremental effects of this plan are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects. After implementation of the recommended mitigation measures, most of the impacts associated with development of the plan would be reduced to a less-than-significant level. The following impacts are considered significant and unavoidable; that is, no feasible mitigation is available or the mitigation measures available were not sufficient to reduce the plan’s impacts to a less-than-significant level. Note, this is only a summary of those impacts; it is important to review the discussions in Chapters 3 and 4 of this Supplemental EIR to understand the full context of the impact determinations. Implementation of the 2020 LRDP Update would result in the following significant unavoidable environmental impacts, following implementation of feasible mitigation measures:

- Impact LRDP-AQ-1: Conflict with or obstruction of implementation of the applicable air quality plan
- Impact LRDP-AQ-2: Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard
- Impact LRDP-AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations
- Impact LRDP-CUL-1: Potential to cause a substantial adverse change in the significance of a historical resource
- Impact LRDP-NOI-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from construction activities in excess of applicable standards
- Impact LRDP-NOI-2: Generation of a substantial temporary or permanent increase in ambient noise levels in the project vicinity from operations in excess of applicable standards
- Impact LRDP-NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels
- Impact LRDP-TRA-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities

Significant and unavoidable cumulative impacts would occur with respect to air quality, historical resources, noise, and transit.

ES.6 Alternatives to the 2020 LRDP Update

State CEQA Guidelines Section 15126.6, as amended, mandates that all EIRs include a comparative evaluation of the proposed plan with alternatives to the plan that are capable of attaining most of the plan's basic objectives, but would avoid or substantially lessen any of the significant effects of the plan. CEQA requires an evaluation of a "range of reasonable" alternatives, including the "no project" alternative. The following alternatives are under consideration for the 2020 LRDP Update:

- **Alternative 1: No Project.** This alternative would involve the continued implementation of the 2010 LRDP. Under the provisions of the 2010 plan, additional growth would occur primarily associated with new buildings and reconfigured square footage in the hospital, patient care, and education components of the campus. Since the existing 2010 LRDP does not include housing or community-serving uses, these would not be included under the No Project Alternative.
- **Alternative 2: Reduced Development Program.** Under this alternative, UC Davis Health would proceed with the 2020 LRDP Update but with an overall reduction in planned campus development. This alternative would reduce the proposed Aggie Square building height of to no more than four stories, which would also reduce proposed building square footages.
- **Alternative 3: Alternative Land Use Plan.** This alternative would relocate Aggie Square to the Cypress side of the campus.
- **Alternative 4: Offsite Housing and Offices.** The changes proposed under the 2020 LRDP Update would still be incorporated into the plan; however, some of the components would be provided at offsite locations. The existing buildings or their sites could be retrofitted to serve the office needs of UC Davis Health or be redeveloped to provide a location for the proposed 200 units of student housing.

The State CEQA Guidelines section 15126.6 states that an EIR should identify the "environmentally superior" alternative. "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."

Each of the alternatives considered would result in long-term, significant and unavoidable environmental impacts. As described in Chapter 6, Alternatives, the Reduced Development Alternative would result in greater impact reductions compared to the other alternatives due to the overall reduction in development, which would reduce building square footage and the on-site daily population. Therefore, the Reduced Development Program Alternative is considered environmentally superior to the Alternative Land Use Plan Alternative and the Offsite Housing and Offices Alternative. However, while this alternative would have lesser impacts than the proposed project, it would not provide the amount of infrastructure needed to facilitate the continued growth of the research and collaboration efforts of the Sacramento Campus. There would be fewer employment and partnership opportunities with less building space. The Reduced Development Program Alternative would provide less opportunity for growth in workforce development and lifelong learning, which would not meet the project objectives.

ES.7 Areas of Controversy

In accordance with CEQA Statute Section 21092 and CEQA Guidelines 15082, a Notice of Preparation (NOP) was prepared and circulated on February 7, 2020, for a minimum 30-day period of public and agency comment. The public review period ended on March 10, 2020. The NOP was submitted to the State Clearinghouse and the clerk-recorder for Sacramento County. A public scoping session was held February 26, 2020, at Aggie Square Headquarters on the UC Davis Sacramento Campus at 2270 Stockton Boulevard, Sacramento, California, 95817. Appendix B contains the comment letters submitted in response to the NOP.

Based on the comments received during the NOP comment period, the major areas of controversy associated with the 2020 LRDP Plan Update are the following.

- Housing, in particular housing demand of increased students and employees and associated impacts on adjacent and surrounding neighborhoods within the vicinity of the Sacramento Campus
- Potential impacts from light, glare, and shadows from campus development
- Concerns regarding hazardous materials from current and historic uses on campus
- Potential impacts on existing utilities and the need for expanded energy, water, and stormwater infrastructure
- Potential impacts on air quality and climate change
- Consideration of all potentially eligible historic and archeological resources
- Traffic impacts (e.g., vehicle miles traveled, congestion, parking, transit, pedestrian, etc.) associated with continued growth of the Sacramento Campus during construction and operation
- Impacts on biological resources from campus development, including retention of existing trees and completion of habitat assessments and surveys

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 Supplemental EIR.

ES.8 Mitigation Monitoring and Report Program

CEQA and the State CEQA Guidelines (Public Resources Code [PRC] Section 21081.6 and State CEQA Guidelines Sections 15091[d] and 15097) require public agencies “to adopt a reporting and monitoring program for changes to the project which it has adopted or made a condition of project approval to mitigate or avoid significant effects on the environment.” A Mitigation Monitoring and Reporting Program (MMRP) is required and has been prepared for the 2020 LRDP Update because the Supplemental EIR identifies potential significant adverse impacts related to the project implementation, and mitigation measures have been identified to reduce those impacts. The MMRP, as presented in Table LRDP-ES-2 has been prepared to ensure that all required mitigation measures are implemented and completed in a satisfactory manner before and during project construction and operation, as applicable. Unless otherwise specified, UC Davis is responsible for taking all actions necessary to implement the mitigation measures under its jurisdiction according to the specifications provided for each measure and for demonstrating that the action has been successfully completed. UC Davis, at its discretion, may delegate implementation responsibility or

portions thereof to a licensed contractor or other designated agent. Section 21081.6 of the Public Resources Code requires the lead agency to identify the “custodian of documents and other material” that constitutes the “record of proceedings” upon which the action on the project was based. The UC Davis Office of Campus Planning and Environmental Stewardship, or designee, is the custodian of such documents for the 2020 LRDP Update.

Table LRDP-ES-1. Summary of Impacts and Mitigation Measures

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Aesthetics			
<p>Impact LRDP-AES-1: In non-urbanized areas, degradation of the existing visual character or quality of public views of the site and its surroundings; in urbanized areas, conflict with zoning or other regulations governing scenic quality</p> <p>The Sacramento Campus and surrounding area is largely developed. New buildings would be visually consistent with the rest of the varied buildings on campus. It is assumed that the structures proposed under the 2020 LRDP Update includes revised height limits. Visual impacts related to landscaping could occur. Mitigation Measure LRDP-AES-1 would reduce this impact. This impact would be less than significant with mitigation.</p>	S	<p>Mitigation Measure LRDP-AES-1: Install New Landscaping</p> <p>The University will install landscaping within the 40-foot landscape buffer adjacent to new specific projects that are approved. Installation would occur within 1 year of the development of new projects.</p>	LTS
<p>Impact LRDP-AES-2: Introduction of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area</p> <p>New construction under the 2020 LRDP Update would create new sources of light and glare, which could affect daytime and nighttime views. However, new buildings are subject to the design review process and Mitigation Measures LRDP-AES-2a through LRDP-AES-2d would ensure that excessive light and glare would not occur. This impact would be less than significant with mitigation.</p>	S	<p>Mitigation Measure LRDP-AES-2a: Apply Design Measures to Building Exteriors</p> <p>Design for specific projects will provide for the use of textured, nonreflective exterior surfaces and nonreflective glass.</p> <p>Mitigation Measure LRDP-AES-2b: Utilize Directional Lighting Methods</p> <p>Except as provided in Mitigation Measure LRDP AES-4c, all new outdoor lighting will use directional lighting methods with shielded and cutoff light fixtures to minimize glare and upward-directed lighting.</p> <p>Mitigation Measure LRDP-AES-2c: Review Lighting, Landscape, and Architectural Features Prior to Installation</p> <p>Noncutoff, unshielded lighting fixtures used to enhance nighttime views of walking paths, specific landscape features, or specific architectural features will be reviewed by Sacramento Campus Facilities Planning, Design, and Construction staff prior to</p>	LTS

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Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		<p>installation to ensure that the minimum amount of required lighting is proposed to achieve the desired nighttime emphasis, and the proposed illumination creates no adverse effect on nighttime views.</p> <p>Mitigation Measure LRDP-AES-2d: Implement Updated Lighting Design</p> <p>The University will implement the use of the specific lighting design and equipment designed to reduce light spill and glare when older lighting fixtures and designs are replaced over time.</p>	
Air Quality			
<p>Impact LRDP-AQ-1: Conflict with or obstruction of implementation of the applicable air quality plan</p> <p>The 2020 LRDP Update includes growth not accounted for in SMAQMD's air quality attainment plans. Likewise, levels of criteria pollutants generated by the 2020 LRDP Update under full implementation would exceed SMAQMD's thresholds and could therefore impede SMAQMD's long-term emissions planning efforts. Mitigation Measures LRDP-AQ-1, LRDP-AQ-2a through LRDP-AQ-2e, and LRDP-TRA-1a would reduce this impact, but not to a less-than-significant level. Therefore, this impact would be significant and unavoidable.</p>	S	<p>Mitigation Measure LRDP-AQ-1: Coordinate with SACOG and SMAQMD on Planning Assumptions</p> <p>Within 90 days from certification of the 2020 LRDP Update Supplemental EIR, UC Davis will provide SACOG and SMAQMD with revised population, employment, building gsf, and housing growth forecasts that account for implementation of 2020 LRDP Update. UC Davis will coordinate with SMAQMD to ensure that emissions associated with campus growth can be accounted in their forthcoming plan to address the 2015 federal ozone standard.</p> <p>Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust</p> <p>Refer to measure description under Impact LRDP-AQ-2.</p> <p>Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust</p> <p>Refer to measure description under Impact LRDP-AQ-2.</p> <p>Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings</p> <p>Refer to measure description under Impact LRDP-AQ-2.</p> <p>Mitigation Measure LRDP-AQ-2d: Offset construction-generated NOx emissions in excess of SMAQMD's threshold of significance</p> <p>Refer to measure description under Impact LRDP-AQ-2.</p>	SU

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Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service Refer to measure description under Impact LRDP-TRA-1.	
Impact LRDP-AQ-2: Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard Construction of buildings and facilities as part of the implementation of the 2020 LRDP Update would not exceed SMAQMD's emissions thresholds with implementation of Mitigation Measures LRDP-AQ-2a through LRDP-AQ-2d. However, operational PM10 emissions resulting from implementation of the 2020 LRDP Update would exceed SMAQMD thresholds, even with implementation of Mitigation Measures LRDP-AQ-2e and LRDP-TRA-1a. Accordingly, this impact would be significant and unavoidable .	S	Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust Land use development projects as part of the implementation of the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce construction-generated fugitive dust. Control of fugitive dust is required per SMAQMD Rule 403 and enhanced by SMAQMD staff. The list of required measures was informed by SMAQMD's basic and enhanced construction emission control practices. <ul style="list-style-type: none"> • Water exposed soil with adequate frequency to prevent fugitive dust and particulates from leaving the project site. However, do not overwater to the extent that sediment flows off the site. Exposed surfaces include, but are not limited to soil piles, graded areas, and unpaved parking areas, • Suspend excavation, grading, and/or demolition activity when sustained wind speeds exceed 25 miles per hour (mph). • Install wind breaks (e.g., plant trees, solid fencing) on average dominant windward side(s) of construction areas. For purposes of implementation, chainlink fencing with added landscape mesh fabric adequately qualifies as solid fencing. • For dust control in disturbed but inactive construction areas, apply soil stabilization measures adequate to mitigate airborne particulates as soon as possible. • Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited. 	SU

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		<ul style="list-style-type: none"> • Treat site accesses from the paved road with a 6- to 12-inch layer of wood chips, mulch, gravel, or other approved method to reduce generation of road dust and road dust carryout onto public roads. • Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered. • Establish a 15-mph speed limit for vehicles driving on unpaved portions of project construction sites. • Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of the District will also be visible to ensure compliance. <p>UC Davis will ensure that the implementation of this mitigation measure is consistent with the UC Davis stormwater program and the California Stormwater Quality Association Stormwater BMP Handbook for New Development/Redevelopment and does not result in off-site runoff as a result of watering for dust control purposes.</p> <p>Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust</p> <p>Land use development projects as part of the implementation of the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce construction-generated emissions from equipment and vehicle exhaust. The list of required measures was informed by SMAQMD's basic and enhanced construction emission control practices.</p> <ul style="list-style-type: none"> • For all development except Aggie Square Phase I, use construction equipment with engines meeting EPA Tier 3 or better emission standards prior to 2025 and EPA Tier 4 Final or better emission standards beginning in 2025. For Aggie Square Phase I, all engines 	

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		<p>must be EPA certified Tier 4 Final or better, regardless of construction year. Equipment requirements may be waived by UC Davis, but only under any of the following unusual circumstances: If a particular piece of off-road equipment with Tier 4 Final standards or Tier 3 standards is technically not feasible, not commercially available, or there is a compelling emergency need to use off-road equipment that does not meet the equipment requirements above. If UC Davis grants the waiver, the contractor will use the next cleanest piece of off-road equipment available, in the following order: Tier 4 Interim, Tier 3, and then Tier 2 engines.</p> <ul style="list-style-type: none"> • Use renewable diesel fuel in all heavy-duty off-road diesel-fueled equipment. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum diesel fuels sold in California. • Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (California Code of Regulations, Title 13, Sections 2449[d][3] and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site. • Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation (California Code of Regulations, Title 13, Sections 2449 and 2449.1). • Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated. <p>Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings</p> <p>Land use development projects as part of the implementation of the 2020 LRDP Update will require its prime construction contractor to</p>	

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		<p>use no- or low-solids content (i.e., no- or low-VOC) architectural coatings with a maximum VOC content of 50 grams per liter.</p> <p>Mitigation Measure LRDP-AQ-2d: Offset construction-generated NOx emissions in excess of SMAQMD's threshold of significance</p> <p>Construction-generated emissions of NOx would exceed the SMAQMD's threshold of significance during 2020, 2022 and 2024.</p> <p>Because construction-generated NOx emissions would exceed SMAQMD's threshold of significance, UC Davis will pay a mitigation fee in the amount of \$4,558 and an administrative fee in the amount of \$228 to SMAQMD to reduce the project impacts from construction NOx emissions to a less-than-significant level. This fee will be used to fund emissions reduction projects within the Sacramento Valley Air Basin. The types of projects that have been used in the past to achieve such reductions include electrification of stationary internal combustion engines (such as agricultural irrigations pumps); replacing old trucks with new, cleaner, more efficient trucks; and a host of other stationary and mobile source emissions-reducing projects. The fee amount is based on an offset cost of \$30,000 per ton of NOx and the total quantity of NOx emissions in excess of SMAQMD's NOx threshold (304 pounds or 0.15 ton based on the daily exceedances in 2020, 2022, and 2024). The administrative fee is 5 percent of the fee amount.</p> <p>UC Davis will pay the mitigation and administrative fees in full prior to issuing a demolition or grading permit for projects developed under the 2020 LRDP Update.</p> <p>An alternative payment plan may be negotiated by UC Davis based on the timing of construction phases that are expected to exceed the SMAQMD's threshold of significance. Any alternative payment plan must be acceptable to SMAQMD and agreed upon in writing prior to issuance of a demolition or grading permit by UC Davis.</p> <p>In coordination with SMAQMD, UC Davis, or its designee, may reanalyze construction NOx emissions from the 2020 LRDP Update prior to starting construction to update the required mitigation and</p>	

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		<p>administrative fees. The analysis must be conducted using SMAQMD-approved emissions model(s) and the fee rates published at the time of reanalysis. The analysis may include onsite measures to reduce construction emissions if deemed feasible by UC Davis. All onsite measures assumed in the analysis must be included in the construction contracts and be enforceable by UC Davis.</p> <p>Mitigation Measure LRDP-AQ-2e: Reduce operational PM10 emissions</p> <p>UC Davis will implement a program that incentivizes employees, students, residents, and visitors to carpool, use electric vehicles (EVs), walk/bike, or use public transit to commute to and from the Sacramento Campus. The program will include, but is not limited to, the following features:</p> <ul style="list-style-type: none"> • Parking: Limit parking capacity to meet onsite demand and provide preferential parking to carpool vehicles, vanpool vehicles, and EVs. The program will implement the following parking related sub-measures. <ul style="list-style-type: none"> a. Provide no more onsite parking spaces than necessary to accommodate the number of employees working at a project site and/or the number of residents living at a project site, as determined by the project size and design. b. Where feasible, for future residential units (on-campus and Aggie Square Phase I), lease/sell parking space separately from the unit and provide the tenant the option of not purchasing/owning a space. c. Nonresidential land uses with 20 or more onsite parking spaces will dedicate preferential parking spaces to vehicles with more than one occupant and zero emission vehicles (including battery electric vehicles and hydrogen fuel cell vehicles). The number of dedicated spaces should be no less than two spaces or 5 percent of the total parking spaces on the project site, whichever is greater. These dedicated spaces will be in preferential locations such as near the main entrances to the buildings served by the 	

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		<p>parking lot and/or under the shade of a structure or trees. These spaces will be clearly marked with signs and pavement markings. This measure will not be implemented in a way that prevents compliance with requirements in the California Vehicle Code regarding parking spaces for disabled persons or disabled veterans.</p> <p>d. Maintain a virtual or real “ride board” for employees and students to organize carpools and incentives for employees using public transit to commute to and from campus</p> <ul style="list-style-type: none"> • Vendor Trips: Implement a program that incentivizes vendors to reduce the emissions associated with vehicles and equipment serving the UC Davis Sacramento Campus. The program will implement the following sub-measures to reduce vendor-related, mobile-source emissions. <ul style="list-style-type: none"> a. Incentivize the use of electric vehicles or other clean fuels in their trucks and equipment. b. Work with vendors, especially those using trucks, to reduce the number of vendor trips made to the campus through trip chaining, reducing the number of shipments, or other methods. • Campus Shuttles: Work with Fleet Services to convert Med-Transit (onsite) shuttles to electric or a lower-emission fuels or implement emission control technologies to reduce criteria air pollutant emissions from existing conditions. • Pedestrian and Bicycle Infrastructure: Enhance walkability and connectivity of the Sacramento Campus to surrounding residential and commercial uses. The program will implement the following site design related sub-measures. <ul style="list-style-type: none"> a. Ensure all new external connections from the Sacramento Campus to existing or planned streets include bicycle/pedestrian access. 	

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		<ul style="list-style-type: none"> b. Eliminate physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation throughout the Sacramento Campus. c. Require all new sidewalks internal and adjacent to the Sacramento Campus to be at least 5 feet wide. Provide grade separation and wider sidewalks (e.g., 7 feet), wherever feasible. d. Require all new sidewalks within the Sacramento Campus to include vertical curbs or a planting strip to separate the sidewalk from the parking or travel lane. e. Construct new roads within the Sacramento Campus to include at least one traffic calming feature, such as street parking, chicanes, horizontal shifts (lane centerline that curves or shifts), bollards, rumble strips, or woonerfs. Coordinate with the City of Sacramento to encourage these features on external roads connecting to the campus. f. Construct new intersections within the Sacramento Campus to include marked crosswalks, count-down signal timers, curb extensions, channelization islands, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, traffic circles or mini-circles. Coordinate with the City of Sacramento to encourage these features on external intersections connecting to the campus • Landscaping Equipment: Reduce emissions from landscaping equipment through the following sub-measures. <ul style="list-style-type: none"> a. Beginning in 2030, require UC Davis landscapers and contracted landscaping companies that maintain campus greenspaces to utilize electric or alternatively fueled mowers and handheld equipment (e.g., trimmers, blowers). b. Encourage xeriscape landscaping in all new campus greenspaces. 	

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		Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service Refer to measure description under Impact LRDP-TRA-1.	
Impact LRDP-AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations Compliance with SMAQMD Rule 902 and Mitigation Measures LRDP-AQ-2a and LRDP-AQ-2b would ensure the 2020 LRDP Update would not expose sensitive receptors to substantial asbestos emissions or localized particulate matter concentrations during construction. Likewise, Mitigation Measure LRDP-AQ-2a through LRDP-AQ-2d would reduce regional criteria pollutant and precursors emissions generated during construction to levels below which they would not significantly degrade regional air quality within the SVAB. However, operational PM10 emissions could expose sensitive receptors to increase particulate pollution, even with implementation of Mitigation Measures LRDP-TRA-1a and LRDP-AQ-2e. Sensitive receptors could also be exposed to significant health risks from TAC emissions generated by construction and operations. Mitigation Measure LRDP-AQ-3b would reduce operational risks to less than significant, but construction risks would remain significant even with implementation of Mitigation Measure LRDP-AQ-3a. Accordingly, this impact would be significant and unavoidable .	S	Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust Refer to measure description under Impact LRDP-AQ-2. Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust Refer to measure description under Impact LRDP-AQ-2. Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings Refer to measure description under Impact LRDP-AQ-2. Mitigation Measure LRDP-AQ-2d: Offset construction-generated NOx emissions in excess of SMAQMD's threshold of significance Refer to measure description under Impact LRDP-AQ-2. Mitigation Measure LRDP-AQ-2e: Reduce operational PM10 emissions Refer to measure description under Impact LRDP-AQ-2. Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service Refer to measure description under Impact LRDP-TRA-1. Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter Land use development projects implemented under the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce receptor exposure to DPM concentrations and associated health risks.	SU

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Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		<ul style="list-style-type: none"> • Limit excess equipment idling to no more than 5 minutes (included in Mitigation Measure LRDP-AQ-2b). • Locate operation of diesel-powered construction equipment as far away from sensitive receptors as possible. • Use equipment during times when receptors are not present (e.g., when school is not in session or during non-school hours), as feasible. • Establish staging areas for the construction equipment that are as distant as possible from offsite receptors, including existing residences. • Where feasible, use equipment with engines meeting EPA Tier 4 Final or better emission standards prior to 2025 (Mitigation Measure LRDP-AQ-2b requires Tier 4 Final engines beginning in 2025 for all development except Aggie Square Phase I, which is required to use EPA Tier 4 Final or better engines regardless of the construction year). • Where feasible, use haul trucks with on-road engines instead of off-road engines even for onsite hauling. • Use electric, compressed natural gas, or other alternatively fueled construction equipment instead of the diesel counterparts, where available. • Coordinate with existing off-campus homeowners where projected cancer risks exceed 10 per million and offer financial assistance to use Minimum Efficiency Reporting Value (MERV) 14 air filters. Financial assistance will be provided for the purchase of up to two filters per year, or per manufacturer recommendations. UC Davis will establish an online procurement system (or similar) to facilitate the purchase and distribution of the filters to residents electing to participate in the program. 	

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Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		<p>Mitigation Measure LRDP-AQ-3b: Reduce receptor exposure to operations generated toxic air contaminants</p> <p>UC Davis will require all diesel emergency generators on the Sacramento Campus to use renewable diesel fuel. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum diesel fuels sold in California. All diesel generators must be transitioned to renewable diesel fuel no later than December 31, 2039.</p> <p>UC Davis will then employ a tiered approach to further reduce sensitive receptor exposure to toxic air contaminants generated by the Sacramento Campus Central Energy Plant. The selected control strategy must be implemented prior to December 31, 2039. The approach will be taken in the following way:</p> <ul style="list-style-type: none"> • Replace at least three of the existing Tier 0 generators with engines meeting EPA Tier 4 Final or better emission standards. If the engine cannot be replaced, then; • Require at least three of the existing Tier 0 generators operate with the most effective California Air Resources Board Verified Diesel Emissions Controls (VDECs) available for the engine type (effectively level 3). If the engine cannot be retrofitted with VDECs, then; • Require all existing Tier 0 generators without VDECs to increase the stack height by at least 20 feet. 	
<p>Impact LRDP-AQ-4: Other emissions (such as those leading to odors) adversely affecting a substantial number of people</p> <p>Like the 2010 LRDP, the 2020 LRDP Update does not contain any odor-generating facilities. Potential odors resulting from construction and daily activities on the UC Davis Sacramento Campus would be minor and would not adversely affect a substantial number of people. Therefore, this impact would be less than significant.</p>	LTS	<p>Mitigation Measures</p> <p>No mitigation measures are necessary.</p>	LTS

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Biological Resources			
Impact LRDP-BIO-1: Potential adverse impacts on valley elderberry longhorn beetle Implementation of the 2020 LRDP Update could result in temporary construction disturbances and permanent modification to the central campus major open space that supports nine elderberry shrubs. These shrubs were evaluated during a field reconnaissance and, as discussed above, are not expected to be occupied by valley elderberry longhorn beetle. This impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS
Impact LRDP-BIO-2: Disturbance of vegetation-nesting migratory birds and raptors, including Swainson's hawk and white-tailed kite Construction activities associated with implementation of the 2020 LRDP Update, such as ground disturbance, vegetation removal, construction equipment use, and general presence of active construction crews, could disturb nesting Swainson's hawks, white-tailed kites, and other nesting migratory birds and raptors. Construction-related disturbances that result in nest abandonment or failure, or mortality of chicks or eggs of migratory birds and raptors would violate the MBTA and California Fish and Game Code Sections 3503, 35.03.5 or 3511. Implementation of Mitigation Measure LRDP-BIO-2 would reduce this impact to a less-than-significant level. Therefore, this impact would be less than significant with mitigation .	S	Mitigation Measure LRDP-BIO-2: Conduct preconstruction surveys for nesting migratory birds and raptors, including special-status species, and establish protective buffers For any projects implemented under the 2020 LRDP Update that would require vegetation removal (i.e., trees, shrubs, and ruderal vegetation) or would result in construction disturbances in the vicinity of vegetated areas, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts to Swainson's hawk, white-tailed kite, and other vegetation-nesting migratory birds and raptors, and to avoid violation of the MBTA, CESA, and California Fish and Game Code Sections 3503, 3503.5, and 3511. <ul style="list-style-type: none"> For construction activities that occur during the nesting season for migratory birds and raptors (generally February through August), the University will retain a qualified wildlife biologist familiar with the nesting behavior of bird species that occur in the plan area to conduct a preconstruction nesting bird survey. The nesting bird surveys will be conducted no less than 14 days prior to vegetation removal or construction disturbance activities near nesting habitat. The survey will include a search of all trees and shrubs, and ruderal areas that provide suitable nesting habitat for birds and raptors within the construction disturbance area. In addition, 	LTS

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Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		<p>a 600-foot area around the construction area will be surveyed for nesting raptors and a 100-foot area around the construction area will be surveyed for songbirds.</p> <ul style="list-style-type: none"> If no special-status raptor species (i.e., Swainson's hawk or white-tailed kite) or active bird or raptor nests are detected during the preconstruction surveys, then no additional measures are required. If an active nest is found in the survey area, a no-disturbance buffer will be established to avoid disturbance or destruction of the nest site until the end of the breeding season (generally August 31) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the construction area (this date varies by species). The extent of these buffers will be determined by a qualified biologist in coordination with any applicable agencies (as determined by species), and will depend on the level of noise or construction disturbance taking place, the line-of-sight between the nest and the disturbance, ambient levels of noise and other non-project disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species; however, a minimum of 50 feet for songbirds and 300 feet for raptors is typical. In developed habitats, buffer areas may be adjusted based on presence of existing barriers. 	
<p>Impact LRDP-BIO-3: Disturbance of structure-nesting migratory birds, including purple martin</p> <p>Construction activities associated with implementation of the 2020 LRDP Update that remove or modify existing building or parking structures could disturb an active purple martin or other structure-nesting migratory bird nest. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of a purple martin nest, or that of another migratory bird, would violate the MBTA and California Fish and Game Code Section 3503. Implementation of Mitigation Measure LRDP-BIO-3 would</p>	S	<p>Mitigation Measure LRDP-BIO-3: Modify existing structures during the non-breeding season for purple martin and other structure-nesting migratory birds or implement exclusion measures to deter nesting</p> <p>For any projects implemented under the 2020 LRDP Update that would modify or demolish any existing building structures, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts on purple martins and other structure-nesting migratory birds, and to avoid violation of the MBTA and California Fish and Game Code Section 3503.</p>	LTS

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reduce this impact to a less-than-significant level. Therefore, this impact would be less than significant with mitigation .		<ul style="list-style-type: none"> • Conduct building demolition and modification activities during the non-breeding season for structure-nesting migratory birds (generally September 1 through January 31). If this is not possible, the University will implement the following avoidance measures. • Prior to the start of each phase of demolition/construction that is anticipated to occur during the migratory bird breeding season (generally February through August), the University will retain a qualified wildlife biologist to thoroughly inspect structures that would be modified or disturbed to locate remnant bird nests or areas such as drain holes or crevices that could be used as nesting areas by migratory birds, such as purple martins. It is preferable to perform this survey in the non-breeding season (September 1 through January 31) so that if nests are found and are determined to be inactive, they may be removed. • After inactive nests are removed and prior to construction that would occur between February 1 and August 31, known or potential nesting areas on or within the building structure to be modified or demolished will be covered with a suitable exclusion material that will prevent birds from nesting (i.e., 0.5- to 0.75-inch mesh netting, plastic tarp, or other suitable material safe for wildlife). Portions of the existing structures containing drain holes or crevices that would be modified or disturbed may also will be covered or filled with suitable material to prevent nesting (i.e., fiberglass insulation, foam padding, and polyvinyl chloride [PVC]/acrylonitrile butadiene styrene [ABS] caps). The University will hire a qualified wildlife management specialist experienced with installation of bird exclusion materials to ensure that exclusion devices are properly installed and will avoid inadvertent entrapment of migratory birds. All exclusion devices will be installed before February 1 and will be monitored throughout the breeding season (typically several times a week). The exclusion material will be anchored so that birds cannot attach their nests to the structures through gaps in a net. 	

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		<ul style="list-style-type: none"> Exclusion devices for migratory birds will be installed consistent with bat exclusion measures and in a manner that does not entrap day-roosting bats. If exclusion material is not installed on structures prior to February 1 and migratory birds colonize a structure, removal or modification to that portion of the structure may not occur until after August 31, or until a qualified biologist has determined that the young have fledged and the nest is no longer in use. If surveys determine that no active bird nests are present within existing structures to be modified or demolished and appropriate steps are taken to prevent migratory birds from constructing new nests as described in the preceding measures, work can proceed at any time of the year. 	
<p>Impact LRDP-BIO-4: Disturbance of structure-roosting bats</p> <p>Construction activities associated with implementation of the 2020 LRDP Update that remove or modify existing building or parking structures could disturb structure-roosting bats during the maternity or hibernation period. Because structure-roosting bats often occur in large colonies, removal or disturbance of a roost site could result in the loss of many bats, which could result in a substantial decrease in the local population of native bats. Implementation of Mitigation Measure LRDP-BIO-4 would reduce this impact to a less-than-significant level. Therefore, this impact would be less than significant with mitigation.</p>	S	<p>Mitigation Measure LRDP-BIO-4: Conduct pre-construction surveys for roosting bats and implement protection measures</p> <p>Baseline data are not available about how bats may use structures in the plan area, their individual numbers, or how they vary seasonally. Daily and seasonal variations in habitat use by bats is common. To obtain the highest likelihood of detection, the following pre-construction bat surveys will be conducted within the construction area prior to modification or demolition of existing building structures. If surveys determine that bats are roosting in the construction area, the University will implement the following protective measures.</p> <p>Conduct Pre-Construction Surveys at Structures</p> <ul style="list-style-type: none"> Before work begins on a building structure, qualified biologists will conduct a daytime search for bat signs and evening emergence surveys to determine whether the structure is being used as a roost. Biologists conducting daytime surveys will listen for audible bat calls and will use the naked eye, binoculars, and a high-powered spotlight to inspect crevices, drain holes, and other visible features that could house bats. Building surfaces and the 	LTS

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		<p>ground around the structure will be surveyed for bat signs, such as guano, staining, and prey remains.</p> <ul style="list-style-type: none"> • Qualified biologists also will conduct evening emergence surveys at structures that contain suitable roosting areas. The surveys will consist of at least one biologist stationed near potential entry and exit points of the structure watching for emerging bats from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights at each survey location within the season that construction would be taking place. Surveys may take place over several nights to fully cover the extent of structure work. All emergence surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Survey methodology may be supplemented as new research identifies advanced survey techniques and equipment that would aid in bat detections. Acoustic detectors may be used during emergence surveys to obtain data on bat species present in the survey area at the time of detection. • If a building structure proposed for modification or demolition is identified as supporting an active bat roost, additional surveys may be required to determine how the structure is used by bats—whether it is used as a night roost, maternity roost, migration stopover, or for hibernation. <p><i>Identify Protective Measures for Bats Using Structures</i></p> <ul style="list-style-type: none"> • If it is determined that bats are using building structures within or adjacent to the construction area as roost sites, the University will coordinate with CDFW to identify protective measures to avoid and minimize impacts on roosting bats based on the type of roost and timing of activities. These measures could include, but are not limited to, the following. <ul style="list-style-type: none"> ◦ If a non-maternity roost is located within a structure that would be modified or disturbed in a manner that would expose the roost, bats will be excluded from the structure by a qualified 	

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		<p>wildlife management specialist working with a bat biologist. An exclusion plan will be developed in coordination with CDFW that identifies the type of exclusion material/devices to be used, the location and method for installing the devices, and monitoring schedule for checking the effectiveness of the devices. Exclusion devices will be installed between September 15 and October 31 to avoid affecting maternal and hibernating bat roosts and will take place during weather and temperature conditions conducive to bat activity. Because bats are expected to tolerate temporary construction noise and vibrations, bats will not be excluded from structures if no direct impacts on the roost are anticipated.</p> <ul style="list-style-type: none"> ○ An alternative to installing exclusion devices would be to make structural changes to a known roost proposed for removal to create conditions in the roost that are undesirable to roosting bats and encourage the bats to leave on their own (e.g., open additional portals so that temperature, wind, light and precipitation regime in the roost change). Structural changes to the roost will be authorized by CDFW and will be performed during the appropriate exclusion timing (listed above) to avoid harming bats. ○ If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined that the roost is no longer active. 	
<p>Impact LRDP-BIO-5: Conflict with a local policy or ordinance protecting biological resources, such as a tree preservation policy or ordinance</p> <p>Implementation of the 2020 LRDP Update could result in the removal of heritage or specimen trees, although none were noted during the reconnaissance survey in March 2020. As a constitutionally created State entity, the University is not subject to municipal regulations, including the City of Sacramento</p>	S	<p>Mitigation Measure LRDP-BIO-5a: Avoid removal of protected trees</p> <p>Before a project is approved under the 2020 LRDP Update, the University will determine whether a tree that would be protected under the University's tree ordinance (i.e., any tree with a DSH of 24 inches or more and in good health or a native tree species with a DSH of 12 inches or greater and in good health) is present on the site. If a protected tree is present within the development footprint, the</p>	LTS

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<p>policies and ordinances. However, the UC Davis main campus in Davis has tree protection standards, and if implementation of the 2020 LRDP Update would result in removal of heritage or specimen trees, this impact would be significant. However, no heritage or specimen trees were observed and Mitigation Measures LRDP-BIO-5a and LRDP-BIO-5b would ensure that heritage or specimen trees are protected. Therefore, this impact would be less than significant with mitigation.</p>		<p>University will modify project design to avoid the protected tree, if feasible.</p> <p>Mitigation Measure LRDP-BIO-5b: Compensate for unavoidable loss of protected trees</p> <p>If avoidance is not feasible, the University will replace the removed heritage or specimen tree with the same species as any removed specimen tree at a ratio of 3:1.</p>	
Archaeological, Historical, and Tribal Cultural Resources			
<p>Impact LRDP-CUL-1: Potential to cause a substantial adverse change in the significance of a historical resource</p> <p>Implementation of the 2020 LRDP Update could result in damage or renovations to existing structures that are significant historical resources or to their settings. Identified projects in the 2020 LRDP Update include substantial renovations to the Governor's Hall, which is over 50 years old and is assumed to meet the criteria for listing in the NRHP and CRHR, would occur under the 2020 LRDP Update. The University is committed to making these changes to Governor's Hall in compliance with the Secretary of Interior's standards, as indicated in Mitigation Measure LRDP-CUL-1a. However, renovation or demolition of other structures may be necessary. If changes are proposed to a building or structure that is a historic property, those changes could diminish the historic integrity of the building, even with implementation of Mitigation Measures LRDP-CUL-1b and LRDP-CUL-1c. Therefore, impacts on historical resources would be significant and unavoidable.</p>	S	<p>Mitigation Measure LRDP-CUL-1a: Prepare Historic Structure Report, adhere to Secretary of the Interior's Standards for the Treatment of Historic Properties, the California State Historical Building Code, and Relevant National Park Service Preservations Briefs</p> <p>Prior to renovating the Governor's Hall building, the University will retain a qualified historic preservation planner to prepare a historic structure report (HSR) for the building in accordance with National Park Service (NPS) Preservation Brief 43 (The Preparation and Use of Historic Structure Reports) and include mitigation measures in conformance with the Secretary of the Interior's Standards (SOIS) for the Treatment of Historic Properties or the California State Historic Building Code (CHBC). The HSR shall identify historic preservation objectives and requirements for the treatments and use of the building prior to initiation of renovations to ensure that the historical significance and condition of the building are considered in the development of proposed renovation work.</p> <p>The University will ensure that preservation treatment objectives outlined in the HSR for the Governor's Hall building seek to meet all SOIS for character-defining features designated in the HSR as having primary significance status, and meet as many SOIS as feasible for those character-defining features designated as having secondary significance status. In instances when the university must address</p>	SU

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		<p>human safety issues not compatible with the SOIS, the university will adhere to the CHBC to the extent feasible. The CHBC is defined in Sections 18950–18961 of Division 13, Part 2.7 of Health and Safety Code and is a mechanism that provides alternative building regulations for permitting repairs, alterations and additions to historic buildings and structures. These standards and regulations are intended to facilitate the rehabilitation and preservation of historic buildings. The CHBC proposes reasonable alternatives so that a property’s fire protection, means of egress, accessibility, structural requirements, and methods of construction would not need to be modernized in a manner that compromises historic integrity. The CHBC is intended to allow continued, safe occupancy while protecting the historic fabric and character-defining features that give a property historic significance, thus promoting adherence to the SOIS. The CHBC recognizes that efforts to preserve the historic materials, features, and overall character of a historical resource at times may conflict with the requirements of regular buildings codes. The Office of the State Fire Marshall has ultimate authority over health and safety and may require use of the standard building code in some instances.</p> <p>The University will use the HSR to help meet SOIS and CHBC requirements as it includes treatments that draw from National Park Service Preservation Briefs relevant to the proposed renovation work. The university will ensure that the HSR’s historic preservation objectives and treatment requirements for the Governor’s Hall building are incorporated into the design and construction specifications. The University will consult with the qualified preservation planner and with staff preservation architects within the Architectural Review and Environmental Compliance Unit of the State Office of Historic Preservation for guidance as needed. The university will ensure the HSR’s historic preservation objectives and treatment requirements for the Governor’s Hall building are incorporated into the proposed renovation specifications.</p>	

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		<p>Mitigation Measure LRDP-CUL-1b: Implement Measures to avoid direct or indirect impacts on historic building or structures</p> <p>Before altering or otherwise affecting a building or structure 50 years of age or older, the University will retain a qualified architectural historian to record it on a California Department of Parks and Recreation DPR 523 form or equivalent documentation. Its significance will be assessed by a qualified architectural historian, using the significance criteria set forth for historic resources under State CEQA Guidelines Section 15064.5. The evaluation process will include the development of appropriate historical background research as context for the assessment of the significance of the structure in the history of the Sacramento Campus and the region.</p> <p>Mitigation Measure LRDP-CUL-1c: Implement measures to avoid direct or indirect impacts on historic building or structures</p> <p>For a building or structure that qualifies as a historical resource, the qualified architectural historian and the University will consult to consider measures that would enable the project to avoid direct or indirect impacts on the building or structure. These could include preserving a building on the margin of the project site, using it “as is,” or other measures that would not alter the building. If alteration of a historic building or structure cannot be reasonably avoided, necessary alterations will be carried out in a manner consistent with the Secretary of the Interior’s Standards for the Treatment of Historic Properties (Section 15126.4[b][1]). If the removal of a historic building or structure cannot be avoided, the University will ensure that a qualified architectural historian thoroughly documents the building and associated landscaping and setting. Documentation will include still and video photography and a written documentary record of the building to the standards of the Historic American Building Survey or Historic American Engineering Record, including accurate scaled mapping, architectural descriptions, and scaled architectural plans, if available.</p>	

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<p>Impact LRDP-CUL-2: Potential to cause a substantial adverse change in the significance of an archaeological resource</p> <p>No archaeological resources have been identified within the 2020 LRDP Update plan area. However, there is potential that buried archaeological resources could be encountered during construction. Therefore, this impact would be less than significant with mitigation.</p>	S	<p>Mitigation Measure LRDP-CUL-2a: Conduct cultural resources sensitivity training</p> <p>Prior to any ground disturbance, construction crews will be required to attend a cultural resources sensitivity training. The training will focus on identifying potential archaeological resources as well as human remains. If potential archaeological resources or human remains are encountered, construction crews will be instructed to notify the University immediately.</p> <p>Mitigation Measure LRDP-CUL-2b: Stop work in the event of discovery of an archaeological resource</p> <p>If an archaeological resource is discovered during construction, all project-related ground disturbance within 100 feet of the find will cease. The University will contact a qualified archaeologist within 24 hours to inspect the site. If a resource is determined to qualify as a unique archaeological resource (as defined by CEQA), and the University determines, in compliance with PRC 21083.2, which requires preservation in place as a first option, that the resource cannot feasibly be avoided, the University will retain a qualified archaeologist to conduct excavations to recover the material. Any archaeologically important artifacts recovered during monitoring will be cleaned, catalogued, and analyzed, with the results presented in an archaeological data recovery report.</p>	LTS
<p>Impact LRDP-CUL-3: Disturbance of any human remains, including those interred outside of dedicated cemeteries</p> <p>There is a high potential to encounter historic-era human remains, especially in the northern portion of the Sacramento Campus, where an unmarked cemetery associated with the Sacramento County Hospital was discovered in 2005. Damage or destruction of human remains would be a significant impact. Implementation of Mitigation Measures LRDP-CUL-3a and LRDP-CUL-3b would ensure that impacts on unknown archaeological</p>	S	<p>Mitigation Measure LRDP-CUL-3a: Retain qualified archaeologist</p> <p>As a first step during a project's environmental review, the University will determine whether the project being implemented under the 2020 LRDP Update is in the portion of the campus where human remains associated with the former burial ground could likely be encountered. If the project site is in or near that area, the University will retain a qualified archaeologist to review the project information and, as necessary, develop and implement a subsurface testing program to check for human remains. If no human remains</p>	LTS

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resources are avoided. Therefore, this impact would be less than significant with mitigation .		<p>are encountered, the project may proceed to construction. If human remains are encountered, Mitigation Measure LRDP-CUL-3b will be implemented.</p> <p>Mitigation Measure LRDP-CUL-3b: Stop work if human remains are encountered</p> <p>In the event of a discovery on campus of human bone, suspected human bone, or a burial, all excavation within 100 feet of the find will halt immediately and the University will contact a qualified archaeologist or the County Coroner within 24 hours to determine whether the bone is human. Consistent with California Health and Safety Code Section 7050.5(b), which prohibits disturbance of human remains uncovered by excavation until the coroner has made a finding relative to PRC Section 5097 procedures, the University will ensure that the remains and vicinity of the find are protected against further disturbance. If it is determined that the find is of Native American origin, the University will comply with the provisions of PRC Section 5097.98 regarding identification and involvement of the Native American Most Likely Descendant (MLD).</p> <p>If human remains cannot be left in place, the University will ensure that the qualified archaeologist and the MLD are provided opportunity to confer on archaeological treatment of human remains, and that appropriate studies, as identified through this consultation, are carried out prior to reinterment. The University will provide results of all such studies to the local Native American community and will provide an opportunity of local Native American involvement in any interpretative reporting.</p> <p>If the human remains are determined to be historic, and cannot be avoided and preserved in place, the area of the project site will be excavated under the supervision of an archaeologist and all human remains and associated artifacts will be removed from the site and analyzed. After analysis, all recovered human remains and associated artifacts will be placed in caskets and buried in a single mass grave at a local cemetery.</p>	

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<p>Impact LRDP-TCR-1: Potential to cause a substantial adverse change in the significance of a tribal cultural resource with cultural value to a California Native American tribe and that is 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)</p> <p>The University has not received requests from tribes culturally or traditionally affiliated with the plan area in Sacramento County to be notified of opportunities to consult on new projects under AB 52. Therefore, the University is not required to take further action under AB 52. Because there were no requests under AB 52, no consultations occurred, and no tribal cultural resources listed or eligible for listing in the CRHR or a local register were identified under the AB 52 process. Therefore, there would be no impact.</p>	NI	<p>Mitigation Measures</p> <p>No mitigation measures are necessary.</p> <p>If tribal cultural resources are identified during project implementation, compliance with PRC Section 21080.3.2 and Section 21084.3(a) would be required.</p>	NI
<p>Impact LRDP-TCR-2: Potential to cause a substantial adverse change in the significance of a tribal cultural resource with cultural value to a California Native American tribe and that is a resource determined by the lead agency to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1</p> <p>The University has not received requests from tribes culturally or traditionally affiliated with the plan area in Sacramento County to be notified of opportunities to consult on new projects under AB 52. Therefore, the University is not required to take further action under AB 52. Because there were no requests under AB 52, no consultations occurred and no tribal cultural resources with cultural value to a California Native American Tribe were identified under the AB 52 process. Therefore, there would be no impact.</p>	NI	<p>Mitigation Measures</p> <p>No mitigation measures are necessary.</p> <p>If tribal cultural resources are identified during project implementation, compliance with PRC Section 21080.3.2 and Section 21084.3(a) would be required.</p>	NI

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Energy			
Impact LRDP-EN-1: Wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation Implementation of the 2020 LRDP Update would increase electricity and natural gas consumption at the site relative to existing conditions during construction activities, as well as long-term operational activities. However, the energy needs for construction would be temporary and not require additional capacity or increase peak or base period demands for electricity or other forms of energy. The 2020 LRDP Update is committed to meeting the UC Sustainable Practices Policy and the UC Davis Sacramento Campus Design Guidelines (including striving for LEED Gold) in all new/renovated facilities, which is designed to reduce the wasteful use of materials (through recycling building materials) and increase building energy efficiently. Therefore, implementation of the 2020 LRDP Update would not result in wasteful, inefficient, and unnecessary consumption of energy, and this impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS
Impact LRDP-EN-2: Conflict with or obstruction of a state or local plan for renewable energy or energy efficiency The 2020 LRDP Update would exceed Title 24 Building Energy Efficiency Standards by attainment of LEED Silver standards at a minimum (striving for Gold) and continued implementation of the UC Sustainable Practices Policy and other efficiency programs and initiatives. Therefore, this impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS

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Geology, Soils, and Seismicity			
<p>Impact LRDP-GEO-1: Potential substantial adverse effects, including the risk of loss, injury, or death involving liquefaction</p> <p>The Sacramento Campus is in an area potentially subject to liquefaction, which could involve structural damage and associated risk. Geotechnical investigations would be necessary to eliminate these risks. Implementation of Mitigation Measure LRDP-GEO-1 would reduce this impact. Therefore, this impact is considered less than significant with mitigation.</p>	S	<p>Mitigation Measure LRDP-GEO-1: Conduct Geotechnical Investigation</p> <p>A site-specific, design-level geotechnical investigation will be conducted during the design phase of each building project under the 2020 LRDP Update. This investigation will be conducted by a licensed geotechnical engineer and include a seismic evaluation of ground acceleration under the design event as well as relevant soil conditions at the site. Geotechnical recommendations will subsequently be incorporated into the foundation and building design for the building project.</p>	LTS
<p>Impact LRDP-GEO-2: Potential to result in substantial soil erosion or the loss of topsoil</p> <p>Construction of individual projects would involve clearing and grading at project sites and trenching in areas where utility infrastructure would be laid. Campus projects are required to comply with National Pollutant Discharge Elimination System (NPDES) permits and would be subject to a Stormwater Pollution Prevention Plan (SWPPP). Therefore, this impact would be less than significant.</p>	LTS	<p>Mitigation Measures</p> <p>No mitigation measures are necessary.</p>	LTS
<p>Impact LRDP-GEO-3: Placement of project-related facilities on expansive soil, creating substantial direct or indirect risks to life or property</p> <p>Soils underlying the campus are characterized as moderately expansive; there would be some potential for damage to improperly designed or constructed facilities. However, the University of California requires all new construction to adhere to the provisions in the CBC, which includes provisions for construction on expansive soils. Therefore, this impact would be less than significant.</p>	LTS	<p>Mitigation Measures</p> <p>No mitigation measures are necessary.</p>	LTS

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Greenhouse Gas Emissions			
<p>Impact LRDP-GHG-1: Generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment</p> <p>Implementation of the 2020 LRDP Update would reduce GHG emissions below existing conditions. Accordingly, the 2020 LRDP Update would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions. This impact would be less than significant.</p>	LTS	<p>Mitigation Measures</p> <p>No mitigation measures are necessary.</p>	LTS
<p>Impact LRDP-GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases</p> <p>The 2020 LRDP Update would not conflict with local UC Davis plans and policies, implementation of the Scoping Plan, or other general state regulations adopted for the purposes of reducing GHG emissions (e.g., SB 100). However, per capita mobile source emissions would exceed SACOG's MTP/SCS GHG reduction target. Total emissions resulting from the 2020 LRDP Update would also exceed project-specific emissions thresholds derived from the state's long-term climate change goals under SB 32 and EO B-55-18. Implementation of the UC Sustainable Practices Policy, Mitigation Measures LRDP-AQ-2e, LRDP-TRA-1a, and LRDP-GHG-2 would reduce emissions consistent with the state's climate change reduction trajectory, as articulated under statewide regulations and legislation (e.g., SB 32, EO B-55-18). Therefore, this impact would be less than significant with mitigation.</p>	S	<p>Mitigation Measure LRDP-AQ-2e: Reduce operational PM10 emissions</p> <p>Refer to measure description under Impact LRDP-AQ-2.</p> <p>Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service</p> <p>Refer to measure description under Impact LRDP-TRA-1.</p> <p>Mitigation Measure LRDP-GHG-2: Implement Verifiable Actions or Activities or Purchase the Equivalent GHG Credits from a CARB Approved Registry or a Locally Approved Equivalent Program to Reduce GHG Emissions Generated by the Sacramento Campus</p> <p>As part of this mitigation measure, UC Davis is making the following separate, though overlapping, GHG emission reduction commitments: (1) As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program; (2) Per the UC Sustainable Practices Policy, Scope 1 and Scope 2 GHG emissions generated by the Sacramento Campus shall, commencing in 2025, be entirely carbon neutral; (3) Also per the UC Sustainable Practices Policy, commencing in 2050, Scope 1, Scope 2, and Scope 3 (commuting and air travel) emissions generated by the Sacramento Campus shall be</p>	LTS

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		<p>voluntarily offset; and (4) UC Davis shall undertake additional action to achieve the following GHG reduction performance standards for the Sacramento Campus:</p> <ul style="list-style-type: none"> • By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 60 percent of emissions generated by the campus in 1990. • By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 20 percent of emissions generated by the campus in 1990. • By 2045 and thereafter, the Sacramento Campus shall achieve carbon neutrality (i.e., net zero emissions). <p>GHG emissions generated by the Sacramento Campus in 1990 have been quantified as part of this Supplemental EIR and total 50,404 metric tons CO₂e. This yields the following GHG targets for the above performance standards.</p> <ul style="list-style-type: none"> • By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 30,242 metric tons CO₂e. • By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 10,081 metric tons CO₂e. • By 2045 and thereafter, GHG emissions generated by the Sacramento Campus shall not exceed net 0 metric tons CO₂e. <p>It is possible that some strategies implemented under the below commitments could independently achieve the performance standards of this measure. Various combinations of strategies could also be pursued to optimize total costs or community co-benefits. UC Davis will be responsible for determining the overall mix of strategies necessary to ensure the performance standards to mitigate GHG generated by the Sacramento Campus. Each of the measure commitments is described in more detail below.</p> <p><i>Compliance with CARB's Cap and Trade Program</i></p> <p>Any carbon credits purchased for the purpose of compliance with CARB's cap and trade program shall be purchased from an</p>	

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		<p>accredited carbon credit market. Such credits (or California Carbon Offsets) shall be registered with, and retired¹ by an Offset Project Registry, as defined in 17 California Code of Regulations § 95802(a), approved by the California Air Resources Board (CARB) such as, but not limited to, Climate Action Reserve (CAR), American Carbon Registry or Verra (formerly Verified Carbon Standard). In order to demonstrate that the carbon credits 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 Davis shall document in its annual report: (i) the protocol used to develop those credits, and (ii) the third-party verification report concerning those credits. As and when the credits are retired, UC Davis shall document in its annual report the unique serial numbers of those credits showing that they have been retired.</p> <p><i>Compliance with the UC Sustainable Practices Policy</i></p> <p>Compliance with the UC Sustainable Practices Policy for carbon neutrality will be accomplished through reductions in direct emissions, the purchase of renewable electricity and possibly biomethane, and the purchase of carbon credits. UC Davis will purchase voluntary carbon credits as the final action to reach the GHG emission reduction targets outline 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 the University's research, teaching, and public service mission. Specifically, any voluntary carbon credits used by UC Davis to comply with the UC Sustainable Practices Policy will:</p>	

¹ 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.

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		<p>1. Prioritize local (within the Sacramento region) and in-state credits over national credits. Credits shall be third-party verified by a major registry recognized by CARB such as CAR. If sufficient local and in-state credits are not available, UC Davis will purchase CARB conforming national credits registered with an approved registry.</p> <p>2. Be reported publicly and tracked through the Climate Registry (TCR) as required by the UC Sustainable Practices Policy. TCR is a non-profit organization governed by U.S. states and Canadian provinces and territories. UC Davis TCR reports will be third-party verified and posted publicly.</p> <p><i>Additional GHG Reduction Actions</i></p> <p>UC Davis shall do one or more of the following options to reduce GHG emissions generated by the Sacramento Campus to achieve the measure performance standards.</p> <p>1. Implement onsite GHG reduction actions on the Sacramento Campus (Option 1).</p> <p>2. Implement GHG reduction actions throughout the communities surrounding the Sacramento Campus in the City of Sacramento (Option 2).</p> <p>3. Purchase CARB verified GHG credits (Option 3).</p> <p>Each of the options is described in more detail below.</p> <p><u><i>Onsite GHG Reduction Actions</i></u></p> <p>Actions to reduce GHG emissions on the Sacramento Campus (Option 1) must exceed or not duplicate activities implemented pursuant to the UC Sustainable Practices Policy. Potential actions may include, but are not limited to the following.</p> <ul style="list-style-type: none"> • (1)-1: All campus fleet vehicles scheduled for retirement shall be replaced with fuel efficient, LEV, ZEV, and/or alternative-fueled vehicles consistent with the needs of the campus. • (1)-2: New construction shall be required to employ solar roofs on at least 30 percent of roof square footage, unless mechanical 	

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		<p>equipment or other building specifications safely prohibit inclusion of solar roofs. The inclusion of solar roofs may be part of meeting LEED Silver or equivalent requirements.</p> <ul style="list-style-type: none"> • (1)-3: Require use of natural alternatives to HFCs that are feasible and readily available for refrigeration and air conditioning. Natural refrigerants include ammonia, CO₂, or hydrocarbons. UC Davis shall require all future development to meet CARB regulations restricting HFCs, if and when adopted. <p>If UC Davis complies with the performance standards of this measure, as specified above, through implementation of onsite GHG reduction actions (Option 1), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through offsite GHG reduction actions (Option 2) or procurement of GHG credits (Option 3).</p> <p><u>Offsite GHG Reduction Actions</u></p> <p>Actions to reduce GHG emissions throughout the surrounding community (Option 2) may include, but are not limited to the following.</p> <ul style="list-style-type: none"> • (2)-1: Develop a residential energy retrofit package in conjunction with the SMUD to achieve reductions in natural gas and electricity usage by the surrounding community. The retrofit package may include identification and sealing of dust and air leaks, installation of programmable thermostats, replacement of interior high use incandescent lamps with compact florescent lamps or LEDs, replacement of natural gas dryers with electric clothes dryers, replacement of windows with double-pane or triple-pane solar-control low-E argon gas filled wood frame windows, or other strategies selected by UC Davis in consultation with SMUD. • (2)-2: Develop a commercial energy retrocommissioning package in conjunction with SMUD to improve the energy efficiency of 	

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		<p>surrounding commercial buildings by at least 15 percent, relative to current (2019) energy consumption levels.</p> <ul style="list-style-type: none"> • (2)-3: Develop a residential rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding homeowners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals. • (2)-4: Develop a commercial rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding business owners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals. • (2)-5: Partner with Sacramento Regional Transit to assess the feasibility of improving high-quality, regional transit serving the Sacramento Campus. <p>If UC Davis complies with the performance standards of this measure, as specified above, through implementation of offsite GHG reduction actions (Option 2), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through onsite GHG reduction actions (Option 1) or procurement of GHG credits (Option 3).</p> <p><u>GHG Credits</u></p> <p>UC Davis may purchase GHG credits from a voluntary GHG credit provider that has an established protocol that requires projects generating GHG credits 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)). Definitions for these terms are as follows.</p>	

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		<ul 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 emissions must be comprehensively accounted for, including unintended effects (often referred to as "leakage"). • 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. • 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. • Verified: GHG reductions must result from activities that have been verified. Verification requires third-party review of monitoring data for a project to ensure the data are complete and accurate. • Enforceable: The emission reductions from offset must be backed by a legal instrument or contract that defines exclusive ownership and the legal instrument can be enforced within the legal system in the country in which the offset project occurs or through other compulsory means. <p>GHG credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or forecasted mitigation units for future committed GHG emissions meeting protocols. All credits shall be documented per protocols functionally equivalent in terms of stringency to CARB's protocol for offsets in the cap and trade program. If using credits not from CARB protocols, UC Davis must provide the protocols from the credit provider and must</p>	

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		<p>document why the protocols are functionally equivalent in terms of stringency to CARB protocols.</p> <p>UC Davis shall identify GHG credits in geographies closest to the Sacramento Campus first and only go to larger geographies (i.e., California, United States) if adequate credits cannot be found in closer geographies, or the procurement of such credits would create an undue financial burden. UC Davis shall provide the following justification for not using credits in closer geographies in terms of either availability or cost prohibition.</p> <ul style="list-style-type: none"> • Lack of enough credits available in closer geographies (i.e., Sacramento County). • Prohibitively costly credits in closer geographies defined as credits costing more than 300 percent the amount of the current costs of credits in the regulated CARB offset market. • UC Davis documentation submitted supporting GHG credit proposals shall be prepared by individuals qualified in GHG credit development and verification and such individuals shall certify the following. <ul style="list-style-type: none"> ○ Proposed credits meet the criteria in California Health and Safety Code Section 38562(d)(1) and (d)(2). ○ Proposed credits meet the definitions for the criteria provided in this measure. ○ The protocols used for the credits meet or exceed the standards for stringency used in CARB protocols for offsets under the California cap-and-trade system. <p><i>Measure Monitoring and Reporting</i></p> <p>As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program. Likewise, UC Davis 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 2050, as described above. These commitments will be</p>	

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		<p>incorporated into UC Davis' annual GHG inventory, which is used to track GHG emissions and sources on the Sacramento Campus. As part of the annual GHG inventory for the Sacramento Campus, UC Davis shall submit a report to The Regents specifying the annual amount of metric ton CO₂e reduction achieved by additional GHG reduction actions implemented pursuant to this mitigation (i.e., Option 1, onsite actions, and Option 2, offsite actions). The report must include evidence that these actions are not being used to mitigate GHG for any other project or entity.</p> <p>GHG reductions achieved by the onsite and offsite actions should be incorporated into the Sacramento Campus' annual GHG inventory. The estimated annual emissions shall then be compared to the measure performance standards described above to determine the level of additional GHG reductions (if any). For the identified amount of exceedance of the performance standard(s), UC Davis shall purchase carbon credits according to the requirements established above under Option 3. As and when the credits are retired, UC Davis shall document in its annual report the unique identifier of those credits showing that they have been retired and accepted by TCR.</p>	

Hazards and Hazardous Materials

Impact LRDP-HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials	LTS	Mitigation Measures	LTS
<p>Construction and operation of the development identified in the 2020 LRDP would result in transport, use, and disposal of hazardous materials to and from the plan area. Adherence to existing regulations and compliance with safety standards that are either currently in place or would be required for new projects would ensure this impact would be less than significant</p>		<p>No mitigation measures are necessary.</p>	

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<p>Impact LRDP-HAZ-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</p> <p>Site workers, the public, and the environment could be inadvertently exposed to preexisting onsite contaminants during construction in the plan area. Structure demolition and ground disturbing activities associated with construction may result in the release or disturbance of contaminated soil or hazardous building materials. Mitigation Measure LRDP-HAZ-2 would reduce this impact. Therefore, this impact would be less than significant with mitigation.</p>	S	<p>Mitigation Measure LRDP-HAZ-2: Prepare a Phase I Environmental Site Assessment</p> <p>To minimize the risk of encountering unknown contamination during construction under the 2020 LRDP Update, the UC Davis Sacramento Campus would prepare a Phase I Environmental Site Assessment before all ground-disturbing construction in areas not previously investigated. A Phase I Environmental Site Assessment would conform with the American Society for Testing and Materials Standard Practice E1527-05 and include at a minimum the following site assessment requirements.</p> <ul style="list-style-type: none"> • An onsite visit to identify current conditions (e.g., vegetative dieback, chemical spill residue, presence of above- or underground storage tanks). • An evaluation of possible risks posed by neighboring properties. • Interviews with persons knowledgeable about the site's history (e.g., current or previous property owners, property managers). • An examination of local planning files to check prior land uses and any permits granted. • File searches with appropriate agencies (e.g., State Water Board, fire department, county health department) having oversight authority relative to water quality and groundwater and soil contamination. • Examination of historical aerial photography of the site and adjacent properties. • A review of current and historic topographic maps of the site to determine drainage patterns. • An examination of chain-of-title for environmental liens and/or activity and land use limitations. <p>If the Phase I Environmental Site Assessment indicates likely site contamination, a Phase II Environmental Site Assessment will be performed (also by an environmental professional).</p>	LTS

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		<p>A Phase II Environmental Site Assessment would comprise the following.</p> <ul style="list-style-type: none"> Collection of original surface and/or subsurface samples of soil, groundwater, and building materials to analyze for quantities of various contaminants. An analysis to determine the vertical and horizontal extent of contamination (if the evidence from sampling shows contamination). <p>If contamination is uncovered as part of Phase I or II Environmental Site Assessments, remediation per EPA's RCRA regulations in 40 CFR Parts 260–299 will be required, and materials will be properly managed and disposed of prior to construction.</p> <p>Any contaminated soil identified on a project site must be properly disposed of in accordance with Department of Toxic Substances Control regulations in effect at the time.</p> <p>If, during construction, soil or groundwater contamination is suspected, construction activities will cease and appropriate health and safety procedures will be implemented, including the use of appropriate personal protective equipment (e.g., respiratory protection, protective clothing, helmets, goggles).</p>	
<p>Impact LRDP-HAZ-3: Result in hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school</p> <p>Although hazardous materials and waste could be handled within 0.25 mile of an existing or proposed school as a result of implementation of the 2020 LRDP Update, handling, storage, and disposal of hazardous materials associated with the 2020 LRDP Update would be subject to campus safety programs and procedures. This impact would be less than significant.</p>	LTS	<p>Mitigation Measures</p> <p>No mitigation measures are necessary.</p>	LTS

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Impact LRDP-HAZ-4: Place project-related facilities on a site that is included on a list of hazardous materials sites, and resulting creation of a significant hazard to the public or the environment Since publication of the 2010 LRDP Final EIR, three new hazardous waste sites have been identified. However, these sites have been investigated, cleanup has been completed, and they would not pose a threat to the onsite daily population associated with the Sacramento Campus, including new residents. Therefore, this impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS
Impact LRDP-HAZ-5: Impair implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan Implementation of projects identified in the 2020 LRDP Update could result in short-term, temporary impacts on street traffic because of potential extension of construction activities into the right-of-way. This could result in a reduction in the number of lanes or temporary closure of certain road segments. This would occur only during construction activities adjacent to roads. This impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS
Hydrology and Water Quality			
Impact LRDP-WQ-1: Violation of any water quality standards or waste discharge requirements or other degradation of surface or groundwater quality Construction and operations resulting from projects associated with the implementation of the 2020 LRDP Update could result in short-term water quality impacts associated with soil erosion and subsequent sediment transport via storm drains. However, implementation of standard erosion control measures and BMPs, as identified in the SWPPP and required by the NPDES Construction General Permit, and compliance with the University	LTS	Mitigation Measures No mitigation measures are necessary.	LTS

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of California sustainability practices and procedures for stormwater management would reduce potential adverse water quality impacts. Changes in impervious area under implementation of the 2020 LRDP Update would not substantially change the type or amount of associated pollutants. Therefore, this impact would be less than significant .			
Impact LRDP-WQ-2: Substantial decrease of groundwater supplies or substantial interference with groundwater recharge such that the project may impede sustainable groundwater management of the basin Implementation of the 2020 LRDP Update would result in increased impervious surface areas. However, the campus is predominantly developed and changes in impervious surface area would not cause substantial change or interference with groundwater recharge or increase groundwater demands. Implementation of landscaping would allow for infiltration and groundwater recharge. Therefore, this impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS
Impact LRDP-WQ-3: Substantial alteration of existing drainage patterns in a manner that would result in substantial erosion or siltation onsite or offsite; substantial increase in the amount of surface runoff in a manner that would result in flooding onsite or offsite; creation of or contribution to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; alteration of the existing drainage pattern in a manner that would impede or redirect flood flows Implementation of the 2020 LRDP Update would result in increased impervious surface areas, and consequently increased stormwater flows. However, stormwater runoff associated with impervious surfaces would be reduced with sustainable site	S	Mitigation Measure LRDP-WQ-1: Implement a Subsoil Drainage System to Avoid Damage to Buildings In the event a subsoil drainage system is required (as determined by a geotechnical analysis), the system will be installed underground to remove excessive water from the soil, and avoid damage to buildings or landscaping. Groundwater from exterior building footings will be conveyed to a sump pump. The effluent will be pumped into the building storm drainage system. Subsoil drainage systems that cannot discharge to the storm sewer by gravity flow will be drained by gravity to sump pumps and will be pumped into the building storm drainage system. Each sump pump will be sized for 100 percent of the estimated design flow. Sump pumps will be connected to the emergency (standby) power system to permit operation	LTS

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design features incorporated into projects associated with implementation of the 2020 LRDP. Changes in impervious area would not substantially change the quantity of stormwater discharge; therefore, no flooding or additional sources of polluted runoff would result. Construction activities may, however, expose soils that contain an excessive amount of water. As a result, damage to buildings or landscaping may result. Mitigation Measure LRDP-WQ-1 would require implementation of a subsoil drainage system to avoid potential damage. Implementation of Mitigation Measure LRDP-WQ-1 would reduce the severity of this impact. Therefore, this impact would be less than significant with mitigation .		during a loss of normal power. Design criteria for the subsoil drainage system will be defined by the geotechnical report.	
Impact LRDP-WQ-4: Conflict with or obstruction of implementation of a water quality control plan or sustainable groundwater management plan Construction BMPs and sustainable site design features would ensure that water quality standards would be achieved, including the water quality objectives that protect designated beneficial uses of surface and groundwater, as defined in the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin. Groundwater use would be similar to existing conditions, and would not conflict with or obstruct implementation of the Central Sacramento County Groundwater Management Plan. Therefore, there would be no impact .	NI	Mitigation Measures No mitigation measures are necessary.	NI
Land Use and Planning			
Impact LRDP-LU-1: Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect The 2020 LRDP Update would not conflict with any applicable land use plan. Because the University holds jurisdiction over campus-related projects, projects carried out by UC Davis would	LTS	Mitigation Measures No mitigation measures are necessary.	LTS

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be consistent with the 2020 LRDP Update. The impact would be less than significant .			
Noise			
<p>Impact LRDP-NOI-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from construction activities in excess of applicable standards</p> <p>Haul truck noise during construction was determined to result in less-than-significant noise increase in the campus vicinity. With regard to construction noise, although most construction activities for future projects under the 2020 LRDP Update would occur during daytime hours when construction noise is exempt from the numerical standards in the Sacramento City Code, construction activities would not be strictly limited to these hours. Therefore, because construction activity may occur outside of these areas and may involve equipment that could generate noise in excess of applicable thresholds at nearby noise-sensitive land uses, construction noise impacts would be considered significant. Mitigation Measures LRDP-NOI-1 would reduce this impact, but not necessarily to a less-than-significant level. Therefore, this impact would be considered significant and unavoidable</p>	S	<p>Mitigation Measure LRDP-NOI-1: Implementation of Measures to Reduce Construction Noise</p> <p>For construction activities associated with future projects under the 2020 LRDP Update, UC Davis will implement or incorporate the following noise reduction measures into construction specifications for contractor(s) implementation during project construction:</p> <ol style="list-style-type: none"> 1. Construction activities will be limited to the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday, when feasible. 2. Pile driving will not occur outside of the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday. 3. All construction equipment used for future projects will be equipped with suitable exhaust and intake silencers in good working order. All construction equipment will be properly maintained and equipped with intake silencers and exhaust mufflers and/or engine shrouds, in accordance with manufacturer recommendations. Equipment engine shrouds, if used, will be closed during equipment operation. 4. All construction equipment and equipment staging areas will be located as far as possible from nearby noise-sensitive land uses, and/or located such that existing or constructed noise attenuating features (e.g., temporary noise wall or blankets) block line of sight between affected noise-sensitive land uses and construction staging areas, to the extent feasible. 5. Individual operations and techniques will be replaced with quieter procedures (e.g., using welding instead of riveting, mixing concrete 	SU

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		<p>offsite instead of onsite) where feasible and consistent with building codes and other applicable laws and regulations.</p> <p>6. Stationary noise sources such as generators or pumps will be located as far as feasible from noise-sensitive land uses.</p> <p>7. No less than one week prior to the start of construction activities at a particular location, notification will be provided to academic, administrative, and residential or noise-sensitive uses (such as schools) located within 500 feet of the construction site.</p> <p>8. For any construction activity that must extend beyond the daytime hours of 7:00 a.m. and 6:00 p.m. on weekdays and Saturdays, and between 9:00 a.m. and 6:00 p.m. on Sundays, the construction contractor for that project will ensure that noise levels at the nearest noise-sensitive land use do not exceed 55 dBA during the hours of 7:00 a.m. to 10:00 p.m. and 50 dBA during the hours of 10:00 p.m. to 7:00 a.m., as feasible. In addition to measures described above, the following measures may also help achieve this performance standard.</p> <p>a. Install temporary noise barriers as close as possible to the noise source or the receptor and located within the direct line-of-sight path between the noise source and nearby sensitive receptor(s). The barrier should be constructed of material that has a surface weight of at least 1 pound per square foot and has an acoustical rating of at least 25 STC (Sound Transmission Class). This can include a temporary barrier constructed with plywood support on a wood frame, sound curtains supported on a frame, or other comparable material.</p> <p>b. Use “quiet” gasoline-powered compressors or electrically powered compressors as well as electric rather than gasoline- or diesel-powered forklifts for small lifting, where feasible.</p> <p>c. Prohibit idling of inactive construction equipment for prolonged periods (i.e., more than 2 minutes).</p>	

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Impact LRDP-NOI-2: Generation of a substantial temporary or permanent increase in noise levels in the project vicinity from operations in excess of applicable standards	S	d. Retain a qualified noise specialist to conduct noise monitoring to ensure that noise reduction measures are achieved the necessary reductions such that levels at the receiving land uses do not exceed 55 dBA during the hours of 7:00 a.m. to 10:00 p.m. and 50 dBA during the hours of 10:00 p.m. to 7:00 a.m.	SU
<p>Operational noise sources resulting from the implementation of the 2020 LRDP Update would include mechanical equipment at the Central Energy Plant, heating and cooling equipment at some individual future buildings, emergency generator testing (at the Central Energy Plan, and elsewhere), operational loading activities, and events at the campus (which can include amplified music or speech). Since precise details about the makes, models and sizes of all equipment to be installed for future projects is not known at this time, and since proposed design features that may attenuate noise (e.g., enclosures or the incorporation of mufflers) is also unknown, noise from emergency generators testing and from mechanical equipment for future development under the 2020 LRDP Update could result in significant noise impacts, and mitigation would be required. With implementation of Mitigation Measures LRDP-NOI-2a and LRDP-NOI-2b, impacts from generator testing and from future mechanical equipment would be reduced to less-than-significant levels. Project traffic noise impacts would be less than significant, with a no more than 0.7 dB increase resulting from project implementation on any analyzed segment.</p> <p>Emergency helicopter operations would increase as a result of the implementation of the 2020 LRDP Update, and this increase would result in more individual homes being located within the 65 CNEL contour for helicopter noise and in one additional helicopter landing and takeoff cycle per day (and therefore an</p>		<p>Mitigation Measure LRDP-NOI-2a: Reduce Noise Exposure from Emergency Generators</p> <p>Prior to approval of a building permit for individual LRDP development projects proposing the installation of emergency generators, documentation will be submitted to the University demonstrating with reasonable certainty that noise from testing of the proposed generator(s) would not exceed 55 dBA at the nearest residential land use. Acoustical treatments to reduce noise from generator testing may include, but are not limited to, the following.</p> <ul style="list-style-type: none"> • Enclosing generator(s) • Incorporating the use of exhaust mufflers or silencers to reduce exhaust noise • Selecting a relatively quiet generator model • Orienting or shielding generator(s) to protect noise-sensitive receptors to the greatest extent feasible • Increasing the distance between generator(s) and noise-sensitive receptors • Placing barriers or enclosures around generator(s) to facilitate the attenuation of noise. <p>In addition, all project generator(s) will be tested only between the hours of 7:00 a.m. and 10:00 p.m.</p> <p>The University will ensure that all recommendations from the acoustical analysis necessary to ensure that generator noise would meet the above requirements will be incorporated into the building design and operations.</p>	

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additional occurrence of potential sleep disturbance per night). Since no mitigation is available to reduce noise from emergency helicopter operations, this impact would be significant and unavoidable for emergency helicopter noise.		<p>Mitigation Measure LRDP-NOI-2b: Reduce Noise Exposure from New Stationary Noise Sources</p> <p>During project design of individual projects proposed under the 2020 LRDP Update, UC Davis will review and ensure that noise-generating equipment, including heating and cooling equipment and exhaust fans, would not result in noise levels in excess of 50 dBA L_{eq} at the nearest residential land use. The project design will incorporate features to reduce equipment noise, as necessary, to ensure the 50 dB L_{eq} at nearby residential land uses is not exceeded. Design features that may be implemented to reduce noise include, but are not limited to: locating equipment within equipment rooms or enclosures that incorporate noise reduction features, such as acoustical louvers; incorporating exhaust and intake silencers, as applicable; or selecting quieter equipment. Should noise levels potentially exceed 50 dBA at the nearest residential land use, UC Davis may require the completion of a detailed noise control analysis (by a person qualified in acoustical analysis and/or engineering) that includes the incorporation of noise reduction measures (including quieter equipment, construction of barriers or enclosures, etc.) prior to the issuance of building permits.</p>	
<p>Impact LRDP-NOI-3: Generation of excessive groundborne vibration or groundborne noise levels</p> <p>Construction activities for future projects under the 2020 LRDP Update would have the potential to generate groundborne vibration. Vibration resulting from LRDP construction would have the potential to result in annoyance effects on primarily onsite and offsite uses, even though offsite uses would all be at least 50 feet or more from onsite construction areas. Conservatively it was determined that annoyance-related vibration impacts on onsite and offsite land uses would be significant, and mitigation is required. With implementation of Mitigation Measure LRDP-NOI-3a, this impact would be reduced to a less-than-significant level. There is also the potential that</p>	S	<p>Mitigation Measure LRDP-NOI-3a: Implement Measures to Reduce Vibration-Related Annoyance Impacts to Onsite Land Uses</p> <p>Should vibration-generating construction activities that do not involve pile driving be proposed within 140 feet of on-campus Category 1 buildings, or should pile driving activities be proposed within 500 feet of Category 1 land uses, the construction contractor will work with the University to identify vibration-producing activities on the construction schedule in advance. The construction contractor will coordinate the timing of the activities with hospital or research units that may be affected to reduce potential vibration-related annoyance effects on sensitive onsite hospital or research receptors. In addition, the construction contractor will appoint a</p>	LTS

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vibration could occur close enough to on-campus buildings to result in potential damage-related effects. Damage-related vibration impacts are determined to be significant, and mitigation is required. With implementation of Mitigation Measure LRDP-NOI-3b, damage-related vibration impacts on campus structures would be reduced to less than significant levels. Vibration impacts would be less than significant with mitigation .		<p>project vibration coordinator who will serve as the point of contact for vibration-related complaints during project construction. Contact information for the project vibration coordinator will be posted at the project site and on a publicly available project website. The project vibration coordinator will be contacted should vibration effects become too disruptive at on-campus uses, and will then work with the construction team to adjust activities to reduce vibration or to reschedule activities for a less sensitive time.</p> <p>Mitigation Measure LRDP-NOI-3b: Implement Measures to Reduce Vibration-Related Annoyance Impacts to Offsite Land Uses</p> <p>Should vibration-generating construction activities for future development under the 2020 LRDP Update (other than pile driving) be proposed outside of the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday, equipment must not operate within 100 feet of on-campus or off-campus residential (Category 2) land uses. Vibration levels at the nearest Category 2 land use will not exceed the applicable vibration criteria of 72 VdB. The contact information for the project vibration coordinator (described in Mitigation Measure LRDP-NOI-3a) will be posted at the project site and on a publicly available project website. Should residents in the project area submit complaints to the project vibration coordinator for nighttime construction vibration concerns, the construction team will adjust activities to reduce vibration, or will reschedule activities for a less sensitive time such that vibration does not exceed 72 dB at nearby Category 2 land uses.</p> <p>Mitigation Measure LRDP-NOI-3c: Protect Adjacent Potentially Susceptible Structures from Construction-Generated Vibration during Pile Driving</p> <p>The construction contractor for development projects under the 2020 LRDP Update will consult with the University to determine whether adjacent or nearby buildings constitute structures that</p>	

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		<p>could be adversely affected by construction-generated vibration. For purposes of this measure, nearby potentially susceptible buildings within 100 feet of a construction site for a future development project will be considered if pile driving would be required at that site.</p> <p>If buildings adjacent to construction activity are identified that could be adversely affected, the project sponsor will incorporate into construction specifications for the proposed project a requirement that the construction contractor(s) use all feasible means to avoid damage to adjacent and nearby buildings. Such methods to help reduce vibration-related damage effects may include maintaining a safe distance between the construction site and the potentially affected building (e.g., at least 100 feet for “historic and some old buildings”), or using “quiet” pile-driving technologies (such as predrilling piles or using sonic pile drivers).</p> <p>Should pile driving be required within 100 feet of a building in the “historic or some old building” category, within 75 feet of buildings in the “older residential structures” category, and within 55 feet of buildings in the “modern industrial/commercial category,” the University will work with the construction contractor to implement a monitoring program to minimize damage to adjacent buildings and ensure that any such damage is documented and repaired. If required, the monitoring program will include the following components:</p> <ul style="list-style-type: none"> • Prior to the start of any ground-disturbing activity, the project sponsor will engage a historic architect or qualified historic preservation professional to undertake a preconstruction survey nearby affected buildings that may be considered historic. For buildings that are not potentially historic, a structural engineer or other professional with similar qualifications will document and photograph the existing conditions of potentially affected buildings within 100 feet of pile-driving activity. 	

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		<ul style="list-style-type: none"> • Based on the construction and condition of the resource(s), the consultant will also establish a standard maximum vibration level that will not be exceeded at any building, based on existing conditions, character-defining features, soil conditions, and anticipated construction practices (common standards are a peak particle velocity of 0.25 inch per second for “historic and some old buildings,” a peak particle velocity of 0.3 inch per second for “older residential structures,” and a peak particle velocity of 0.5 inch per second for “new residential structures” and “modern industrial/commercial buildings,” as shown in Table 3.11-4). • To ensure that vibration levels do not exceed the established standard, the project sponsor will monitor vibration levels at each structure and prohibit vibratory construction activities that generate vibration levels in excess of the standard. • Should vibration levels be observed in excess of the selected standard, construction will be halted and alternative construction techniques put in practice, to the extent feasible (e.g., predrilled piles could be substituted for driven piles, if feasible, based on soil conditions, or smaller, lighter equipment could be used in some cases). • The historic preservation professional (for effects on historic buildings) and/or structural engineer (for effects on non-historic structures) will conduct regular periodic inspections (every 3 months) of each building during ground-disturbing activity on the project site. Should damage to any building occur, the building(s) will be remediated to their preconstruction condition at the conclusion of ground-disturbing activity on the site. 	

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Impact LRDP-NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels <p>There are no public or public use airport facilities in the vicinity of the Sacramento Campus, and there would be no noise impacts related to aircraft activity at public airports. There are also no private airstrips within 2 miles of the campus, but there is an on-campus emergency helipad. Implementation of the 2020 LRDP Update would result in approximately one additional emergency helicopter landing and takeoff cycle per day at the on-campus helipad, which could result in increased sleep disturbance for nearby residences. In addition, this projected growth in helicopter operations is expected to expand the 65 CNEL contour to include residences north of the campus that are not included in this contour under existing conditions. This impact is therefore significant. There is no feasible mitigation to reduce this impact to a less-than-significant level. Therefore, this impact would be significant and unavoidable.</p>	S	Mitigation Measures No mitigation measures are feasible.	SU
Population and Housing			
Impact LRDP-POP-1: Induce substantial unplanned population growth either directly or indirectly <p>Implementation of the 2020 LRDP Update would increase the daily population of the UC Davis Sacramento Campus through increased student enrollment, non-UC employees, and UC Davis Health faculty and staff. However, this would not result in a substantial increase to the population of the Sacramento region. Therefore, this impact would be less than significant.</p>	LTS	Mitigation Measures No mitigation measures are necessary.	LTS

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Impact LRDP-POP-2: Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere Implementation of the 2020 LRDP Update would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. Therefore, this impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS
Public Services			
Impact LRDP-PS-1: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for fire protection facilities The implementation of the 2020 LRDP Update would not modify existing service area boundaries; however, increased population and development could increase demand for fire services. This increase in demand would not result in the need for additional fire protection facilities. Therefore, this impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS
Impact LRDP-PS-2: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for police protection facilities The 2020 LRDP Update would result in an increase in the daily onsite population of staff, faculty, students, patients, visitors, and residents. The population increase would likely result in the need for additional police services on the Sacramento Campus. However, a small increase in officers would not require new facilities. Therefore, this impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS

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Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact LRDP-PS-3: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for school facilities Because of the dispersal of the population affiliated with the Sacramento Campus, the population increase resulting from implementation of the 2020 LRDP Update would not result in a substantial increase in enrollment in any one school district. No new facilities would be needed; therefore, this impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS
Impact LRDP-PS-4: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for other public facilities The increase in campus population that is expected to occur with implementation of the 2020 LRDP Update could result in an increased demand for public facilities such as libraries. However, this increase in demand is not expected to result in the need for new or expanded public facilities. Therefore, this impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS
Recreation			
Impact LRDP-REC-1: Increased use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility that would occur or be accelerated Demand for park and recreational facilities at the UC Davis Sacramento Campus could increase as a result of implementation of the 2020 LRDP Update. However, the increased population associated with the Sacramento Campus is expected to be widely distributed, would reside in areas already served by parks and would not significantly increase the use of existing park facilities	LTS	Mitigation Measures No mitigation measures are necessary.	LTS

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or result in substantial physical deterioration. Therefore, this impact would be less than significant .			
Impact LRDP-REC-2: Construction or expansion of recreational facilities that might have an adverse physical effect on the environment While the 2020 LRDP Update does include several areas of open space, no construction or expansion of recreational facilities that might have an adverse effect on the environment is proposed. Therefore, there would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS
Transportation and Circulation			
Impact LRDP-TRA-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities Implementation of the 2020 LRDP Update would increase bicycle and pedestrian travel but would not physically disrupt an existing pedestrian or bicycle facility or interfere with implementation of a planned pedestrian or bicycle facility. Growth associated with the 2020 LRDP Update would increase demand for transit serving the campus by approximately 300 new daily passengers and would also increase peak hour delays on roadways surrounding the campus, which would adversely affect bus transit operations. This impact would be significant and unavoidable .	S	Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service During the 2020–2021 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline on-time performance metrics for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess on-time performance for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus every two years over the 2020 LRDP Update planning horizon. During its standard project review process, UC Davis shall forecast and analyze traffic conditions on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus for individual development projects proposed under the 2020 LRDP Update that are expected to affect operations on these roadways. Relative to baseline levels, if operations on Broadway and Stockton Boulevard are found to cause transit services to fail to meet established standards or to worsen transit performance for services that already fail to meet established	SU

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		<p>standards, or if a project-level analysis indicates the same, UC Davis shall institute TDM strategies to reduce peak hour vehicle trips and, in turn, delays to transit service on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus.</p> <p>The implementation of TDM strategies shall offset degradations to transit on-time performance in excess of established on-time performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update.</p> <p>Implementation of TDM strategies that would reduce delays to transit service on Broadway to Stockton Boulevard include strategies to reduce vehicle travel to and from campus and to minimize the effect of campus operations on surrounding roadways. Specific potential TDM strategies include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Modify campus-operated shuttles to avoid Broadway and Stockton Boulevard, to the extent practical; • Promote walking and bicycling for student and employee trips to and from the UC Davis Sacramento Campus; • Expand public transit service, including additional service connecting campus with student and employee residential areas; • Implement a fair value commuting program or other pricing of vehicle travel and parking; • Provide carpool and/or vanpool incentive programs; • Allow flexible work hours and schedule classes to reduce arrivals/departures during peak hours; and • Offer remote working options. <p>The TDM strategies implemented to reduce delays to transit service at these locations will be consistent with existing and planned TDM programs on campus. If these TDM strategies are not sufficient to reduce delays to transit service per the criteria described above, additional TDM measures or adjustments to the measures above</p>	

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		<p>shall be implemented, as needed to reduce peak hour intersection delay consistent with the criteria described above.</p> <p>Mitigation Measure LRDP-TRA-1b: Monitor transit performance and implement transit service and/or facility improvements</p> <p>During the 2020–2021 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline transit performance (i.e., loading, productivity, and on-time performance) and safety metrics for routes operating within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess transit performance and safety for routes operating within the vicinity of the Sacramento Campus every two years over the 2020 LRDP Update planning horizon.</p> <p>Relative to baseline levels, if the performance of routes operating within the vicinity of the Sacramento Campus is found to fail to meet established standards or if performance worsens for services that already fail to meet established standards, SacRT and other relevant transportation agencies shall implement transit service and/or facility improvements. The implementation of transit service and/or facility improvements shall offset degradations to transit performance in excess of established performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update.</p> <p>Currently, SacRT and other relevant transit operators regularly monitor transit service performance and adjust service levels, as feasible, according to established service standards. SacRT and other relevant transit operators would continue to implement this monitoring and service change process over the duration of the 2020 LRDP Update implementation. Moreover, UC Davis would continue to adjust campus-operated shuttle routes and schedules as warranted by passenger demand and other operating</p>	

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		<p>considerations. Additionally, nearby roadway owners such as the City of Sacramento and Caltrans operate and maintain their facilities consistent with their policies and standards related to multi-modal transportation operations. As requested, UC Davis shall meet with SacRT, the City of Sacramento, Caltrans, and/or other transportation agencies to coordinate the implementation of transit service and/or facility improvements.</p> <p>Potential transit improvements include modifying existing transit routes or adding new routes to serve areas of the Sacramento Campus underserved by transit, adding service capacity (through increased headways and/or larger vehicles) to prevent chronic overcrowding, constructing transit priority treatments to improve service reliability (i.e., transit only lanes on Broadway and Stockton Boulevard, transit signal priority at traffic signals, etc.), improving terminal facilities to accommodate additional passengers and transit vehicles, and improving coordination between transit providers. Improvements should be selected based on existing performance data and targeted to address those areas not meeting established service standards (e.g., investing in transit priority treatments if on-time performance is the issue, or adding service capacity if vehicle loading is the issue).</p> <p>Transit facility and roadway improvements shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento, and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities (e.g., additional bus service that exceeds available bus stop or transit terminal capacity) or otherwise adversely affect transit operations.</p>	

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Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		<p>Mitigation Measure LRDP-TRA-1c: Monitor transit-related collisions and implement countermeasures to minimize potential conflicts with transit service and facilities</p> <p>During the 2020–2021 academic year and every 2 years thereafter, UC Davis shall record on-campus collisions involving a transit vehicle and establish a transit vehicle collision rate. The rate should be sensitive to transit provider, location context, and facility type (e.g., intersection versus segment). UC Davis shall determine the on-campus transit vehicle collision rate as part of a biennial mitigation monitoring program. In instances where the rate increases from the prior observation period, UC Davis shall develop and implement countermeasures that address collision hot-spots and common primary collision factors. UC Davis shall also identify and develop countermeasures for locations where the change in the mix of travel patterns and behavior is determined to be incompatible with the facility as designed. Potential countermeasures include physically separating modes in shared operating environments, particularly high- versus low-speed travel modes, and increased education and enforcement.</p> <p>Transit facility and roadway improvements that intend to minimize conflicts between transit vehicles and other travel modes shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento (for facilities within the City of Sacramento), and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities or otherwise adversely affect transit operations.</p>	
<p>Impact LRDP-TRA-2: Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)</p> <p>Implementation of the 2020 LRDP Update would result in additional vehicle travel generated by the Sacramento Campus. However, the Sacramento Campus is a low VMT-generating area of the Sacramento region with access to mass transit and</p>	LTS	<p>Mitigation Measures</p> <p>No mitigation measures are required.</p>	LTS

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multiple travel options. The 2020 LRDP Update would further add to the campus' existing mix of medical, education, and employment uses, as well as increase complementary land uses, which would increase internal trip capture and reduce VMT generation. This impact would be less than significant .			
Impact LRDP-TRA-3: Result in changes to the transportation system that would create hazardous features or incompatible traffic uses The 2020 LRDP Update does not propose any new roadways or transportation facilities that would be inconsistent with applicable design standards. This impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are required.	LTS
Impact LRDP-TRA-4: Result in inadequate emergency access The Sacramento Campus roadway and transportation network is designed to maintain high levels of accessibility and includes multiple emergency vehicle access facilities that can be used when necessary. This ensures emergency response vehicles have the necessary access when responding to an emergency. This impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are required.	LTS
Impact LRDP-TRA-5: Result in construction activity that could cause temporary impacts to transportation and traffic Implementation of the 2020 LRDP Update would involve construction activities that could cause temporary impacts to transportation facilities. However, mitigation measure LRDP-TRA-5 would reduce this impact. Therefore, this impact would be less than significant with mitigation .	S	Mitigation Measure LRDP-TRA-5: Prior to the issuance of any grading or building permits, a Construction Traffic Management Plan (TMP) will be prepared to the satisfaction of UC Davis Health and the City of Sacramento Department of Public Works for City-owned roadways The Construction TMP will include items such as the following. <ul style="list-style-type: none"> • Preserving emergency vehicle access routes to existing buildings on the Sacramento Campus • Providing truck circulation routes/patterns that minimizes effects on existing vehicle traffic during peak travel periods and maintains safe bicycle circulation • Monitoring for roadbed damage and timing for completing repairs 	LTS

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Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		<ul style="list-style-type: none"> • Preserving safe and convenient passage for bicyclists and pedestrians through/around construction areas • Creating methods for partial (i.e., single lane)/complete street closures (e.g., timing, signage, location and duration restrictions), if necessary • Identifying detour routes for roadways subject to partial/complete street closures • Identifying temporary UC Davis shuttle stops and detoured shuttle routes if existing stops or routes are affected • Identifying temporary SacRT bus stops and detoured bus routes, if existing stops or routes are affected • Developing criteria for use of flaggers and other traffic controls • Providing a point of contact for nearby residents, Sacramento Campus staff, students, and visitors, and other stakeholders to contact to obtain construction information and have questions answered <p>The Construction TMP will be developed so that the following performance standards are achieved throughout project construction.</p> <ul style="list-style-type: none"> • Maintain emergency vehicle access to all buildings on the Sacramento Campus at all times. • Maintain identified emergency vehicle routes to UC Davis Health medical facilities at all times. Notify appropriate contacts for UC Davis Health and/or emergency responders at least 24 hours prior to any construction-related partial/complete closures that may affect emergency vehicle routes, and provide clear identification of detours when necessary. • Minimize construction traffic during morning and evening peak periods when street traffic on local and campus streets are highest. 	

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		<ul style="list-style-type: none"> • Close (i.e., partially or fully) any construction-related public roadways only during off-peak periods and provide appropriate construction signage, including detour routing. • Limit detour routing to campus roadways or City collector and arterial roadways, such as Stockton Boulevard and Broadway, to the extent feasible. Include measures to minimize traffic increases on local residential roadways; this may include signage and law enforcement presence during partial/complete closures to discourage through-traffic use of local residential roadways. • Clear roadways, sidewalks, crosswalks, and bicycle facilities of debris (e.g., rocks) that could otherwise impede travel and impact public safety, and maintain them in this condition. <p>UC Davis will also consider any concurrent construction activity and other active Construction TMPs when reviewing new Construction TMPs for specific LRDP implementation projects. This review will address the effects of simultaneous construction activity.</p>	

Utilities and Service Systems

Impact LRDP-UT-1: Relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects

LTS

Mitigation Measures

No mitigation measures are necessary.

LTS

While the implementation of the 2020 LRDP Update would increase the Sacramento Campus population and generate a corresponding increase in demand for utilities, the campus and the surrounding area have adequate facilities to accommodate this demand and would not require the relocation or construction of new facilities. This impact would be **less than significant**.

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<p>Impact LRDP-UT-2: Creation of a need for new or expanded entitlements or resources for sufficient water supply to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years</p> <p>While the implementation of the 2020 LRDP Update would increase the campus population and generate a corresponding increase in demand for water, water conservation strategies are expected to partially offset the increased demand. The increased demand for water would not require new or expanded entitlements. Therefore, this impact would be less than significant.</p>	LTS	<p>Mitigation Measures</p> <p>No mitigation measures are necessary.</p>	LTS
<p>Impact LRDP-UT-3: A determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments</p> <p>Development associated with implementation of the 2020 LRDP Update would increase wastewater but would not require any substantial infrastructure improvements at SRWTP. Therefore, this impact would be less than significant.</p>	LTS	<p>Mitigation Measures</p> <p>No mitigation measures are necessary.</p>	LTS
<p>Impact LRDP-UT-4: Project-related exceedance of state or local solid waste standards or of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals</p> <p>While the implementation of the 2020 LRDP Update would increase the campus population and building square footage and generate a corresponding increase in solid waste, the UC Sustainable Practices Policy is expected to reduce waste and partially offset the increased demand for landfill capacity. The increase demand for landfill space would not require new or expanded entitlements. Therefore, this impact would be less than significant.</p>	LTS	<p>Mitigation Measures</p> <p>No mitigation measures are necessary.</p>	LTS

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Impact LRDP-UT-5: Inconsistency with federal, state, and local management and reduction statutes and regulations related to solid waste The 2020 LRDP Update is not subject to the waste reduction targets of the UC Sustainable Practices Policy because, as a medical center, the Sacramento Campus is exempt. Therefore, this impact would be less than significant .	LTS	Mitigation Measures No mitigation measures are necessary.	LTS

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Table LRDP-ES-2. LRDP Mitigation and Monitoring Program

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
Aesthetics					
Impact LRDP-AES-1: In non-urbanized areas, degradation of the existing visual character or quality of public views of the site and its surroundings; in urbanized areas, conflict with zoning or other regulations governing scenic quality	Mitigation Measure LRDP-AES-1: Install New Landscaping The University will install landscaping within the 40-foot landscape buffer adjacent to new specific projects that are approved. Installation would occur within 1 year of the development of new projects.	Review project design for landscaping specifications.	DE	Prior to final design approval	Sacramento Campus Facilities Design and Construction
		Install landscaping.	CO	Within 1 year of the development of new projects	Sacramento Campus Facilities Design and Construction
Impact LRDP-AES-2: Introduction of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	Mitigation Measure LRDP-AES-2a: Apply Design Measures to Building Exteriors Design for specific projects will provide for the use of textured, nonreflective exterior surfaces and nonreflective glass.	Review project design for use of textured, nonreflective exterior surfaces and nonreflective glass.	DE	Prior to final design approval	Sacramento Campus Facilities Design and Construction
		Mitigation Measure LRDP-AES-2b: Utilize Directional Lighting Methods Except as provided in Mitigation Measure LRDP AES-4c, all new outdoor lighting will use directional lighting methods with shielded and cutoff type light fixtures to minimize glare and upward-directed lighting.	DE	Prior to final design approval	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<p>Mitigation Measure LRDP-AES-2c: Review Lighting, Landscape, and Architectural Features Prior to Installation</p> <p>Noncutoff, unshielded lighting fixtures used to enhance nighttime views of walking paths, specific landscape features, or specific architectural features will be reviewed by Sacramento Campus Facilities Planning, Design, and Construction staff prior to installation to ensure that the minimum amount of required lighting is proposed to achieve the desired nighttime emphasis, and the proposed illumination creates no adverse effect on nighttime views.</p>	Review project design for lighting, landscaping, and architectural features.	DE	Prior to final project design	Sacramento Campus Facilities Design and Construction
	<p>Mitigation Measure LRDP-AES-2d: Implement Updated Lighting Design</p> <p>The University will implement the use of the specific lighting design and equipment designed to reduce light spill and glare when older lighting fixtures and designs are replaced over time.</p>	Implement updated lighting design.	OP	During operation; ongoing as older exterior lighting fixtures are replaced	Sacramento Campus Facilities Design and Construction
Air Quality					
Impact LRDP-AQ-1: Conflict with or obstruction of implementation of the applicable air quality plan	<p>Mitigation Measure LRDP-AQ-1: Coordinate with SACOG and SMAQMD on Planning Assumptions</p> <p>Within 90 days from certification of the 2020 LRDP Update Supplemental EIR, UC Davis will provide SACOG and SMAQMD with revised population, employment, building gsf, and housing growth forecasts</p>	Provide SACOG and SMAQMD with revised population, employment, and building gsf, and housing growth forecasts; coordinate with SMAQMD to ensure that emissions associated with campus	DE	Within 90 days from the certification of the 2020 LRDP Update Supplemental EIR	UC Davis Campus Planning and Environmental Stewardship

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	that account for implementation of 2020 LRDP Update. UC Davis will coordinate with SMAQMD to ensure that emissions associated with campus growth can be accounted in their forthcoming plan to address the 2015 federal ozone standard.	growth are accounted in forthcoming plans.			
Impact LRDP-AQ-2: Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard	<p>Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust</p> <p>Land use development projects as part of the implementation of the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce construction-generated fugitive dust. Control of fugitive dust is required per SMAQMD Rule 403 and enhanced by SMAQMD staff. The list of required measures was informed by SMAQMD's basic and enhanced construction emission control practices.</p> <ul style="list-style-type: none"> • Water exposed soil with adequate frequency to prevent fugitive dust and particulates from leaving the project site. However, do not overwater to the extent that sediment flows off the site. Exposed surfaces include, but are not limited to soil piles, graded areas, and unpaved parking areas, • Suspend excavation, grading, and/or demolition activity when sustained wind speeds exceed 25 miles per hour (mph). • Install wind breaks (e.g., plant trees, solid fencing) on average dominant 	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated fugitive dust reduction measures.	CO	Regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>windward side(s) of construction areas. For purposes of implementation, chainlink fencing with added landscape mesh fabric adequately qualifies as solid fencing.</p> <ul style="list-style-type: none"> • For dust control in disturbed but inactive construction areas, apply soil stabilization measures adequate to mitigate airborne particulates as soon as possible. • Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited. • Treat site accesses from the paved road with a 6- to 12-inch layer of wood chips, mulch, gravel, or other approved method to reduce generation of road dust and road dust carryout onto public roads. • Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered. • Establish a 15-mph speed limit for vehicles driving on unpaved portions of project construction sites. • Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust 			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<p>complaints. This person will respond and take corrective action within 48 hours. The phone number of the District will also be visible to ensure compliance.</p> <p>UC Davis will ensure that the implementation of this mitigation measure is consistent with the UC Davis stormwater program and the California Stormwater Quality Association Stormwater BMP Handbook for New Development/Redevelopment and does not result in off-site runoff as a result of watering for dust control purposes.</p>				
	<p>Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust</p> <p>Land use development projects as part of the implementation of the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce construction-generated emissions from equipment and vehicle exhaust. The list of required measures was informed by SMAQMD's basic and enhanced construction emission control practices.</p> <ul style="list-style-type: none"> • For all development except Aggie Square Phase I, use construction equipment with engines meeting EPA Tier 3 or better emission standards prior to 2025 and EPA Tier 4 Final or better emission standards beginning in 2025. For Aggie 	<p>Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated emissions reduction measures.</p>	CO	Regular intervals throughout the construction period.	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>Square Phase I, all engines must be EPA certified Tier 4 Final or better, regardless of construction year. Equipment requirements may be waived by UC Davis, but only under any of the following unusual circumstances: If a particular piece of off-road equipment with Tier 4 Final standards or Tier 3 standards is technically not feasible; not commercially available; or there is a compelling emergency need to use off-road equipment that does not meet the equipment requirements, above. If UC Davis grants the waiver, the contractor will use the next cleanest piece of off-road equipment available, in the following order: Tier 4 Interim, Tier 3, and then Tier 2 engines.</p> <ul style="list-style-type: none"> • Use renewable diesel fuel in all heavy-duty off-road diesel-fueled equipment. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum diesel fuels sold in California. • Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (California Code of Regulations, Title 13, Sections 2449[d][3] and 2485). Provide clear signage that posts this 			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<p>requirement for workers at the entrances to the site.</p> <ul style="list-style-type: none"> • Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation (California Code of Regulations, Title 13, Sections 2449 and 2449.1). • Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated. 				
	<p>Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings</p> <p>Land use development projects as part of the implementation of the 2020 LRDP Update will require its prime construction contractor to use no- or low-solids content (i.e., no- or low-VOC) architectural coatings with a maximum VOC content of 50 grams per liter.</p>	Incorporate measure as part of construction and contractor specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified measure.	CO/OP	Regular intervals throughout the construction period; implementing on a continuing basis during operation	Sacramento Campus Facilities Design and Construction
	<p>Mitigation Measure LRDP-AQ-2d: Offset construction-generated NO_x emissions in excess of SMAQMD's threshold of significance</p> <p>Construction-generated emissions of NO_x would exceed the SMAQMD's threshold of significance during 2020, 2022 and 2024.</p>	Pay the mitigation and administrative fees prior to construction or reanalyze NO _x emissions from the 2020 LRDP Update prior to starting construction to determine if offsets still required.	DE	During project design; prior to construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>Because construction-generated NO_x emissions would exceed SMAQMD's threshold of significance, UC Davis will pay a mitigation fee in the amount of \$4,558 and an administrative fee in the amount of \$228 to SMAQMD to reduce the project impacts from construction NO_x emissions to a less-than-significant level. This fee will be used to fund emissions reduction projects within the Sacramento Valley Air Basin. The types of projects that have been used in the past to achieve such reductions include electrification of stationary internal combustion engines (such as agricultural irrigations pumps); replacing old trucks with new, cleaner, more efficient trucks; and a host of other stationary and mobile source emissions-reducing projects. The fee amount is based on an offset cost of \$30,000 per ton of NO_x and the total quantity of NO_x emissions in excess of SMAQMD's NO_x threshold (304 pounds or 0.15 ton based on the daily exceedances in 2020, 2022, and 2024). The administrative fee is 5 percent of the fee amount.</p> <p>UC Davis will pay the mitigation and administrative fees in full prior to issuing a demolition or grading permit for projects developed under the 2020 LRDP Update.</p> <p>An alternative payment plan may be negotiated by UC Davis based on the timing of construction phases that are expected to exceed the SMAQMD's</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>threshold of significance. Any alternative payment plan must be acceptable to SMAQMD and agreed upon in writing prior to issuance of a demolition or grading permit by UC Davis.</p> <p>In coordination with SMAQMD, UC Davis, or its designee, may reanalyze construction NO_x emissions from the 2020 LRDP Update prior to starting construction to update the required mitigation and administrative fees. The analysis must be conducted using SMAQMD-approved emissions model(s) and the fee rates published at the time of reanalysis. The analysis may include onsite measures to reduce construction emissions if deemed feasible by UC Davis. All onsite measures assumed in the analysis must be included in the construction contracts and be enforceable by UC Davis.</p>			
	<p>Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service</p> <p>During the 2020–2021 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline on-time performance metrics for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the</p>	Document transit enhancement efforts and progress; continue to work with SacRT staff.	OP Annually	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess on-time performance for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus every two years over the 2020 LRDP Update planning horizon. During its standard project review process, UC Davis shall forecast and analyze traffic conditions on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus for individual development projects proposed under the 2020 LRDP Update that are expected to affect operations on these roadways. Relative to baseline levels, if operations on Broadway and Stockton Boulevard are found to cause transit services to fail to meet established standards or to worsen transit performance for services that already fail to meet established standards, or if a project-level analysis indicates the same, UC Davis shall institute TDM strategies to reduce peak hour vehicle trips and, in turn, delays to transit service on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus.</p> <p>The implementation of TDM strategies shall offset degradations to transit on-time performance in excess of established on-time performance standards (per the most up-to-date SacRT Service Standards) that</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>are attributable to the implementation of the 2020 LRDP Update.</p> <p>Implementation of TDM strategies that would reduce delays to transit service on Broadway to Stockton Boulevard include strategies to reduce vehicle travel to and from campus and to minimize the effect of campus operations on surrounding roadways. Specific potential TDM strategies include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Modify campus-operated shuttles to avoid Broadway and Stockton Boulevard, to the extent practical; • Promote walking and bicycling for student and employee trips to and from the UC Davis Sacramento Campus; • Expand public transit service, including additional service connecting campus with student and employee residential areas; • Implement a fair value commuting program or other pricing of vehicle travel and parking; • Provide carpool and/or vanpool incentive programs; • Allow flexible work hours and schedule classes to reduce arrivals/departures during peak hours; and • Offer remote working options. <p>The TDM strategies implemented to reduce delays to transit service at these</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	locations will be consistent with existing and planned TDM programs on campus. If these TDM strategies are not sufficient to reduce delays to transit service per the criteria described above, additional TDM measures or adjustments to the measures above shall be implemented, as needed to reduce peak hour intersection delay consistent with the criteria described above.				
	<p>Mitigation Measure LRDP-AQ-2e: Reduce operational PM10 emissions</p> <p>UC Davis will implement a program that incentivizes employees, students, residents, and visitors to carpool, use EVs, walk/bike, or use public transit to commute to and from the Sacramento Campus. The program will include, but is not limited to, the following features:</p> <ul style="list-style-type: none"> • Parking: Limit parking capacity to meet onsite demand and provide preferential parking to carpool vehicles, vanpool vehicles, and EVs. The program will implement the following parking related sub-measures. <ul style="list-style-type: none"> a. Provide no more onsite parking spaces than necessary to accommodate the number of employees working at a project site and/or the number of residents living at a project site, as determined by the project size and design. 	Implement program to incentivize alternative commuting modes.	OP	On a continuing basis with annual reporting	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>b. Where feasible, for future residential units (on-campus and Aggie Square Phase I), lease/sell parking space separately from the unit and provide the tenant the option of not purchasing/owning a space.</p> <p>c. Nonresidential land uses with 20 or more onsite parking spaces will dedicate preferential parking spaces to vehicles with more than one occupant and zero emission vehicles (including battery electric vehicles and hydrogen fuel cell vehicles). The number of dedicated spaces should be no less than two spaces or 5 percent of the total parking spaces on the project site, whichever is greater. These dedicated spaces will be in preferential locations such as near the main entrances to the buildings served by the parking lot and/or under the shade of a structure or trees. These spaces will be clearly marked with signs and pavement markings. This measure will not be implemented in a way that prevents compliance with requirements in the California Vehicle Code regarding parking spaces for disabled persons or disabled veterans.</p> <p>d. Maintain a virtual or real “ride board” for employees and students to organize carpools and incentives for</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>employees using public transit to commute to and from campus</p> <ul style="list-style-type: none"> • Vendor Trips: Implement a program that incentivizes vendors to reduce the emissions associated with vehicles and equipment serving the UC Davis Sacramento Campus. The program will implement the following sub-measures to reduce vendor-related, mobile-source emissions. <ul style="list-style-type: none"> a. Incentivize the use of electric vehicles or other clean fuels in their trucks and equipment. b. Work with vendors, especially those using trucks, to reduce the number of vendor trips made to the campus through trip chaining, reducing the number of shipments, or other methods. • Campus Shuttles: Work with Fleet Services to convert Med-Transit (onsite) shuttles to electric or a lower-emission fuels or implement emission control technologies to reduce criteria air pollutant emissions from existing conditions. • Pedestrian and Bicycle Infrastructure: Enhance walkability and connectivity of the Sacramento Campus to surrounding residential and commercial uses. The program will implement the following site design related sub-measures. 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>a. Ensure all new external connections from the Sacramento Campus to existing or planned streets include bicycle/pedestrian access.</p> <p>b. Eliminate physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation throughout the Sacramento Campus.</p> <p>c. Require all new sidewalks internal and adjacent to the Sacramento Campus to be at least 5 feet wide. Provide grade separation and wider sidewalks (e.g., 7 feet), wherever feasible.</p> <p>d. Require all new sidewalks within the Sacramento Campus to include vertical curbs or a planting strip to separate the sidewalk from the parking or travel lane.</p> <p>e. Construct new roads within the Sacramento Campus to include at least one traffic calming feature, such as street parking, chicanes, horizontal shifts (lane centerline that curves or shifts), bollards, rumble strips, or woonerfs. Coordinate with the City of Sacramento to encourage these features on external roads connecting to the campus.</p> <p>f. Construct new intersections within the Sacramento Campus to include marked crosswalks, count-down signal timers, curb extensions,</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<p>channelization islands, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, traffic circles or mini-circles. Coordinate with the City of Sacramento to encourage these features on external intersections connecting to the campus</p> <ul style="list-style-type: none"> Landscaping Equipment: Reduce emissions from landscaping equipment through the following sub-measures. <ol style="list-style-type: none"> Beginning in 2030, require UC Davis landscapers and contracted landscaping companies that maintain campus greenspaces to utilize electric or alternatively fueled mowers and handheld equipment (e.g., trimmers, blowers). Encourage xeriscape landscaping in all new campus greenspaces 				
Impact LRDP-AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations	<p>Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust</p> <p>Land use development projects as part of the implementation of the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce construction-generated fugitive dust. Control of fugitive dust is required per SMAQMD Rule 403 and enhanced by SMAQMD staff. The list of required measures was informed by</p>	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated fugitive dust reduction measures.	CO	Regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>SMAQMD's basic and enhanced construction emission control practices.</p> <ul style="list-style-type: none"> • Water exposed soil with adequate frequency to prevent fugitive dust and particulates from leaving the project site. However, do not overwater to the extent that sediment flows off the site. Exposed surfaces include, but are not limited to soil piles, graded areas, and unpaved parking areas, • Suspend excavation, grading, and/or demolition activity when sustained wind speeds exceed 25 miles per hour (mph). • Install wind breaks (e.g., plant trees, solid fencing) on average dominant windward side(s) of construction areas. For purposes of implementation, chainlink fencing with added landscape mesh fabric adequately qualifies as solid fencing. • For dust control in disturbed but inactive construction areas, apply soil stabilization measures adequate to mitigate airborne particulates as soon as possible. • Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited. • Treat site accesses from the paved road with a 6- to 12-inch layer of wood chips, mulch, gravel, or other approved 			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>method to reduce generation of road dust and road dust carryout onto public roads.</p> <ul style="list-style-type: none"> • Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered. • Establish a 15-mph speed limit for vehicles driving on unpaved portions of project construction sites. • Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of the District will also be visible to ensure compliance. <p>UC Davis will ensure that the implementation of this mitigation measure is consistent with the UC Davis stormwater program and the California Stormwater Quality Association Stormwater BMP Handbook for New Development/Redevelopment and does not result in off-site runoff as a result of watering for dust control purposes.</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<p>Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust</p> <p>Land use development projects as part of the implementation of the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce construction-generated emissions from equipment and vehicle exhaust. The list of required measures was informed by SMAQMD's basic and enhanced construction emission control practices.</p> <ul style="list-style-type: none"> For all development except Aggie Square Phase I, use construction equipment with engines meeting EPA Tier 3 or better emission standards prior to 2025 and EPA Tier 4 Final or better emission standards beginning in 2025. For Aggie Square Phase I, all engines must be EPA certified Tier 4 Final or better, regardless of construction year. Equipment requirements may be waived by UC Davis, but only under any of the following unusual circumstances: If a particular piece of off-road equipment with Tier 4 Final standards or Tier 3 standards is technically not feasible; not commercially available; or there is a compelling emergency need to use off-road equipment that does not meet the equipment requirements, above. If UC Davis grants the waiver, the contractor 	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated emissions reduction measures.	CO	Regular intervals throughout the construction period.	Sacramento Campus Facilities Design and Construction

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>will use the next cleanest piece of off-road equipment available, in the following order: Tier 4 Interim, Tier 3, and then Tier 2 engines.</p> <ul style="list-style-type: none"> • Use renewable diesel fuel in all heavy-duty off-road diesel-fueled equipment. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum diesel fuels sold in California. • Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (California Code of Regulations, Title 13, Sections 2449[d][3] and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site. • Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation (California Code of Regulations, Title 13, Sections 2449 and 2449.1). • Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated. 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<p>Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings</p> <p>Land use development projects as part of the implementation of the 2020 LRDP Update will require its prime construction contractor to use no- or low-solids content (i.e., no- or low-VOC) architectural coatings with a maximum VOC content of 50 grams per liter.</p>	Incorporate measure as part of construction and contractor specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified measure.	CO/OP	Regular intervals throughout the construction period; implementing on a continuing basis during operation	Sacramento Campus Facilities Design and Construction
	<p>Mitigation Measure LRDP-AQ-2d: Offset construction generated NO_x emissions in excess of SMAQMD's threshold of significance</p> <p>Construction-generated emissions of NO_x would exceed the SMAQMD's threshold of significance during 2020, 2022 and 2024. Because construction-generated NO_x emissions would exceed SMAQMD's threshold of significance, UC Davis will pay a mitigation fee in the amount of \$4,558 and an administrative fee in the amount of \$228 to SMAQMD to reduce the project impacts from construction NO_x emissions to a less-than-significant level. This fee will be used to fund emissions reduction projects within the Sacramento Valley Air Basin. The types of projects that have been used in the past to achieve such reductions include electrification of stationary internal combustion engines (such as agricultural irrigations pumps); replacing old trucks with new, cleaner, more</p>	Pay the mitigation and administrative fees prior to construction or reanalyze NO _x emissions from the 2020 LRDP Update prior to starting construction to determine if offsets still required.	DE	During project design; prior to construction	Sacramento Campus Facilities Design and Construction

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>efficient trucks; and a host of other stationary and mobile source emissions-reducing projects. The fee amount is based on an offset cost of \$30,000 per ton of NO_x and the total quantity of NO_x emissions in excess of SMAQMD's NO_x threshold (304 pounds or 0.15 ton based on the daily exceedances in 2020, 2022, and 2024). The administrative fee is 5 percent of the fee amount.</p> <p>UC Davis will pay the mitigation and administrative fees in full prior to issuing a demolition or grading permit for projects developed under the 2020 LRDP Update.</p> <p>An alternative payment plan may be negotiated by UC Davis based on the timing of construction phases that are expected to exceed the SMAQMD's threshold of significance. Any alternative payment plan must be acceptable to SMAQMD and agreed upon in writing prior to issuance of a demolition or grading permit by UC Davis.</p> <p>In coordination with SMAQMD, UC Davis, or its designee, may reanalyze construction NO_x emissions from the 2020 LRDP Update prior to starting construction to update the required mitigation and administrative fees. The analysis must be conducted using SMAQMD-approved emissions model(s) and the fee rates published at the time of reanalysis. The analysis may include onsite measures to reduce construction</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	emissions if deemed feasible by UC Davis. All onsite measures assumed in the analysis must be included in the construction contracts and be enforceable by UC Davis.				
	<p>Mitigation Measure LRDP-AQ-2e: Reduce operational PM10 emissions</p> <p>UC Davis will implement a program that incentivizes employees, students, residents, and visitors to carpool, use EVs, walk/bike, or use public transit to commute to and from the Sacramento Campus. The program will include, but is not limited to, the following features:</p> <ul style="list-style-type: none"> • Parking: Limit parking capacity to meet onsite demand and provide preferential parking to carpool vehicles, vanpool vehicles, and EVs. The program will implement the following parking related sub-measures. <ul style="list-style-type: none"> a. Provide no more onsite parking spaces than necessary to accommodate the number of employees working at a project site and/or the number of residents living at a project site, as determined by the project size and design. b. Where feasible, for future residential units (on-campus and Aggie Square Phase I), lease/sell parking space separately from the unit and provide the tenant the option of not purchasing/owning a space. 	Implement program to incentivize alternative commuting modes.	OP	On a continuing basis with annual reporting	Sacramento Campus Facilities Design and Construction

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>c. Nonresidential land uses with 20 or more onsite parking spaces will dedicate preferential parking spaces to vehicles with more than one occupant and zero emission vehicles (including battery electric vehicles and hydrogen fuel cell vehicles). The number of dedicated spaces should be no less than two spaces or 5 percent of the total parking spaces on the project site, whichever is greater. These dedicated spaces will be in preferential locations such as near the main entrances to the buildings served by the parking lot and/or under the shade of a structure or trees. These spaces will be clearly marked with signs and pavement markings. This measure will not be implemented in a way that prevents compliance with requirements in the California Vehicle Code regarding parking spaces for disabled persons or disabled veterans.</p> <p>d. Maintain a virtual or real “ride board” for employees and students to organize carpools and incentives for employees using public transit to commute to and from campus</p> <ul style="list-style-type: none"> • Vendor Trips: Implement a program that incentivizes vendors to reduce the emissions associated with vehicles and equipment serving the UC Davis Sacramento Campus. The program will 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>implement the following sub-measures to reduce vendor-related, mobile-source emissions.</p> <ul style="list-style-type: none"> a. Incentivize the use of electric vehicles or other clean fuels in their trucks and equipment. b. Work with vendors, especially those using trucks, to reduce the number of vendor trips made to the campus through trip chaining, reducing the number of shipments, or other methods. <ul style="list-style-type: none"> • Campus Shuttles: Work with Fleet Services to convert Med-Transit (onsite) shuttles to electric or a lower-emission fuels or implement emission control technologies to reduce criteria air pollutant emissions from existing conditions. • Pedestrian and Bicycle Infrastructure: Enhance walkability and connectivity of the Sacramento Campus to surrounding residential and commercial uses. The program will implement the following site design related sub-measures. <ul style="list-style-type: none"> a. Ensure all new external connections from the Sacramento Campus to existing or planned streets include bicycle/pedestrian access. b. Eliminate physical barriers such as walls, landscaping, and slopes that 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>impede pedestrian circulation throughout the Sacramento Campus.</p> <p>c. Require all new sidewalks internal and adjacent to the Sacramento Campus to be at least 5 feet wide. Provide grade separation and wider sidewalks (e.g., 7 feet), wherever feasible.</p> <p>d. Require all new sidewalks within the Sacramento Campus to include vertical curbs or a planting strip to separate the sidewalk from the parking or travel lane.</p> <p>e. Construct new roads within the Sacramento Campus to include at least one traffic calming feature, such as street parking, chicanes, horizontal shifts (lane centerline that curves or shifts), bollards, rumble strips, or woonerfs. Coordinate with the City of Sacramento to encourage these features on external roads connecting to the campus.</p> <p>f. Construct new intersections within the Sacramento Campus to include marked crosswalks, count-down signal timers, curb extensions, channelization islands, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, traffic circles or mini-circles. Coordinate with the City of Sacramento to encourage these</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>features on external intersections connecting to the campus</p> <ul style="list-style-type: none"> • Landscaping Equipment: Reduce emissions from landscaping equipment through the following sub-measures. <ol style="list-style-type: none"> a. Beginning in 2030, require UC Davis landscapers and contracted landscaping companies that maintain campus greenspaces to utilize electric or alternatively fueled mowers and handheld equipment (e.g., trimmers, blowers). b. Encourage xeriscape landscaping in all new campus greenspaces. 			
	<p>Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service</p> <p>During the 2020–2021 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline on-time performance metrics for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess on-time performance for routes operating on Broadway and Stockton Boulevard within</p>	Document transit enhancement efforts and progress; continue to work with SacRT staff.	OP Annually	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>the vicinity of the Sacramento Campus every two years over the 2020 LRDP Update planning horizon. During its standard project review process, UC Davis shall forecast and analyze traffic conditions on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus for individual development projects proposed under the 2020 LRDP Update that are expected to affect operations on these roadways. Relative to baseline levels, if operations on Broadway and Stockton Boulevard are found to cause transit services to fail to meet established standards or to worsen transit performance for services that already fail to meet established standards, or if a project-level analysis indicates the same, UC Davis shall institute TDM strategies to reduce peak hour vehicle trips and, in turn, delays to transit service on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus.</p> <p>The implementation of TDM strategies shall offset degradations to transit on-time performance in excess of established on-time performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update.</p> <p>Implementation of TDM strategies that would reduce delays to transit service on Broadway to Stockton Boulevard include</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>strategies to reduce vehicle travel to and from campus and to minimize the effect of campus operations on surrounding roadways. Specific potential TDM strategies include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Modify campus-operated shuttles to avoid Broadway and Stockton Boulevard, to the extent practical; • Promote walking and bicycling for student and employee trips to and from the UC Davis Sacramento Campus; • Expand public transit service, including additional service connecting campus with student and employee residential areas; • Implement a fair value commuting program or other pricing of vehicle travel and parking; • Provide carpool and/or vanpool incentive programs; • Allow flexible work hours and schedule classes to reduce arrivals/departures during peak hours; and • Offer remote working options. <p>The TDM strategies implemented to reduce delays to transit service at these locations will be consistent with existing and planned TDM programs on campus. If these TDM strategies are not sufficient to reduce delays to transit service per the criteria described above, additional TDM measures or adjustments to the measures</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	above shall be implemented, as needed to reduce peak hour intersection delay consistent with the criteria described above.				
	<p>Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter</p> <p>Land use development projects implemented under the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce receptor exposure to DPM concentrations and associated health risks.</p> <ul style="list-style-type: none"> • Limit excess equipment idling to no more than 5 minutes (included in Mitigation Measure LRDP-AQ-2b). • Locate operation of diesel-powered construction equipment as far away from sensitive receptors as possible. • Use equipment during times when receptors are not present (e.g., when school is not in session or during non-school hours), as feasible. • Establish staging areas for the construction equipment that are as distant as possible from offsite receptors, including existing residences. • Where feasible, use equipment with engines meeting EPA Tier 4 Final or better emission standards prior to 2025 (Mitigation Measure LRDP-AQ-2b) 	Incorporate measure as part of construction specifications and documentation and inspect construction site at regular intervals during construction to verify compliance with specified construction-generated emissions reduction measures.	CO	Regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction
		Coordinate with existing off-campus homeowners and offer financial assistance to use MERV 14 air filters; establish an online procurement system (or similar) to facilitate the purchase and distribution of the filters to eligible residents electing to participate in the program.	DE/CO	During project design; prior to construction; regular intervals throughout the construction period	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>requires Tier 4 Final engines beginning in 2025 for all development except Aggie Square Phase I, which is required to use EPA Tier 4 Final or better engines regardless of the construction year).</p> <ul style="list-style-type: none"> • Where feasible, use haul trucks with on-road engines instead of off-road engines even for onsite hauling. • Use electric, compressed natural gas, or other alternatively fueled construction equipment instead of the diesel counterparts, where available. • Coordinate with existing off-campus homeowners where projected cancer risks exceed 10 per million and offer financial assistance to use Minimum Efficiency Reporting Value (MERV) 14 air filters. Financial assistance will be provided for the purchase of up to two filters per year, or per manufacturer recommendations. UC Davis will establish an online procurement system (or similar) to facilitate the purchase and distribution of the filters to residents electing to participate in the program. 			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<p>Mitigation Measure LRDP-AQ-3b: Reduce receptor exposure to operations generated toxic air contaminants</p> <p>UC Davis will require all diesel emergency generators on the Sacramento Campus to use renewable diesel fuel. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum diesel fuels sold in California. All diesel generators must be transitioned to renewable diesel fuel no later than December 31, 2039.</p> <p>UC Davis will then employ a tiered approach to further reduce sensitive receptor exposure to toxic air contaminants generated by the Sacramento Campus Central Energy Plant. The selected control strategy must be implemented prior to December 31, 2039. The approach will be taken in the following way:</p> <ul style="list-style-type: none"> • Replace at least three of the existing Tier 0 generators with engines meeting EPA Tier 4 Final or better emission standards. If the engine cannot be replaced, then; • Require at least three of the existing Tier 0 generators operate with the most effective California Air Resources Board 	<p>Ensure all diesel emergency generators use renewable diesel fuel meeting ASTM specifications by December 31, 2039.</p> <p>Employ a tiered control strategy prior to December 31, 2039.</p>	OP	Implementing on a continuing basis during operation	Sacramento Campus Facilities Design and Construction
			OP	Implementing on a continuing basis during operation	Sacramento Campus Facilities Design and Construction

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<p>Verified Diesel Emissions Controls (VDECs) available for the engine type (effectively level 3). If the engine cannot be retrofitted with VDECs, then;</p> <ul style="list-style-type: none"> Require all existing Tier 0 generators without VDECs to increase the stack height by at least 20 feet. 				
Biological Resources					
Impact LRDP-BIO-2: Disturbance of vegetation-nesting migratory birds and raptors, including Swainson's hawk and white-tailed kite	<p>Mitigation Measure LRDP-BIO-2: Conduct preconstruction surveys for nesting migratory birds and raptors, including special-status species, and establish protective buffers</p> <p>For any projects implemented under the 2020 LRDP Update that would require vegetation removal (i.e., trees, shrubs, and ruderal vegetation) or would result in construction disturbances in the vicinity of vegetated areas, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts to Swainson's hawk, white-tailed kite, and other vegetation-nesting migratory birds and raptors, and to avoid violation of the MBTA, CESA, and California Fish and Game Code Sections 3503, 3503.5, and 3511.</p> <ul style="list-style-type: none"> For construction activities that occur during the nesting season for migratory birds and raptors (generally February through August), the University will retain a qualified wildlife biologist familiar with the nesting behavior of 	Retain a qualified biologist to conduct preconstruction surveys; implement measures as applicable.	DE	Prior to final design approval and project construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>bird species that occur in the plan area to conduct a preconstruction nesting bird survey. The nesting bird surveys will be conducted no less than 14 days prior to vegetation removal or construction disturbance activities near nesting habitat. The survey will include a search of all trees and shrubs, and ruderal areas that provide suitable nesting habitat for birds and raptors within the construction disturbance area. In addition, a 600-foot area around the construction area will be surveyed for nesting raptors and a 100-foot area around the construction area will be surveyed for songbirds.</p> <ul style="list-style-type: none"> • If no special-status raptor species (i.e., Swainson's hawk or white-tailed kite) or active bird or raptor nests are detected during the preconstruction surveys, then no additional measures are required. If an active nest is found in the survey area, a no-disturbance buffer will be established to avoid disturbance or destruction of the nest site until the end of the breeding season (generally August 31) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the construction area (this date varies by species). The extent of these buffers will be determined by a qualified biologist in coordination with any applicable agencies (as determined by species), and will depend on the level of 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	noise or construction disturbance taking place, the line-of-sight between the nest and the disturbance, ambient levels of noise and other non-project disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species; however, a minimum of 50 feet for songbirds and 300 feet for raptors is typical. In developed habitats, buffer areas may be adjusted based on presence of existing barriers.				
Impact LRDP-BIO-3: Disturbance of structure-nesting migratory birds, including purple martin	<p>Mitigation Measure LRDP-BIO-3: Modify existing structures during the non-breeding season for purple martin and other structure-nesting migratory birds or implement exclusion measures to deter nesting</p> <p>For any projects implemented under the 2020 LRDP Update that would modify or demolish any existing building structures, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts to purple martins and other structure-nesting migratory birds, and to avoid violation of the MBTA and California Fish and Game Code Section 3503.</p> <ul style="list-style-type: none"> • Conduct building demolition and modification activities during the non-breeding season for structure-nesting migratory birds (generally September 1 through January 31). If this is not 	Retain a qualified biologist to conduct preconstruction surveys; implement measures as applicable.	DE	Prior to final design approval and project construction.	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>possible, the University will implement the following avoidance measures.</p> <ul style="list-style-type: none"> • Prior to the start of each phase of demolition/construction that is anticipated to occur during the migratory bird breeding season (generally February through August), the University will retain a qualified wildlife biologist to thoroughly inspect structures that would be modified or disturbed to locate remnant bird nests or areas such as drain holes or crevices that could be used as nesting areas by migratory birds, such as purple martins. It is preferable to perform this survey in the non-breeding season (September 1 through January 31) so that if nests are found and are determined to be inactive, they may be removed. • After inactive nests are removed and prior to construction that would occur between February 1 and August 31, known or potential nesting areas on or within the building structure to be modified or demolished will be covered with a suitable exclusion material that will prevent birds from nesting (i.e., 0.5- to 0.75-inch mesh netting, plastic tarp, or other suitable material safe for wildlife). Portions of the existing structures containing drain holes or crevices that would be modified or disturbed may also will be covered or filled with suitable material to prevent 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>nesting (i.e., fiberglass insulation, foam padding, and polyvinyl chloride [PVC]/acrylonitrile butadiene styrene [ABS] caps). The University will hire a qualified wildlife management specialist experienced with installation of bird exclusion materials to ensure that exclusion devices are properly installed and will avoid inadvertent entrapment of migratory birds. All exclusion devices will be installed before February 1 and will be monitored throughout the breeding season (typically several times a week). The exclusion material will be anchored so that birds cannot attach their nests to the structures through gaps in a net.</p> <ul style="list-style-type: none"> • Exclusion devices for migratory birds will be installed consistent with bat exclusion measures and in a manner that does not entrap day-roosting bats. • If exclusion material is not installed on structures prior to February 1 and migratory birds colonize a structure, removal or modification to that portion of the structure may not occur until after August 31, or until a qualified biologist has determined that the young have fledged and the nest is no longer in use. • If surveys determine that no active bird nests are present within existing structures to be modified or demolished and appropriate steps are taken to prevent migratory birds from 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	constructing new nests as described in the preceding measures, work can proceed at any time of the year.				
Impact LRDP-BIO-4: Disturbance of structure-roosting bats	<p>Mitigation Measure LRDP-BIO-4: Conduct pre-construction surveys for roosting bats and implement protection measures</p> <p>Baseline data are not available about how bats may use structures in the plan area, their individual numbers, or how they vary seasonally. Daily and seasonal variations in habitat use by bats is common. To obtain the highest likelihood of detection, the following pre-construction bat surveys will be conducted within the construction area prior to modification or demolition of existing building structures. If surveys determine that bats are roosting in the construction area, the University will implement the following protective measures.</p> <p><i>Conduct Pre-Construction Surveys at Structures</i></p> <ul style="list-style-type: none"> • Before work begins on a building structure, qualified biologists will conduct a daytime search for bat signs and evening emergence surveys to determine whether the structure is being used as a roost. Biologists conducting daytime surveys will listen for audible bat calls and will use the naked eye, binoculars, and a high-powered spotlight to inspect crevices, 	Retain a qualified biologist to conduct preconstruction surveys; implement measures as applicable during construction.	DE	Prior to final design approval and project construction	Sacramento Campus Facilities Design and Construction

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>drain holes, and other visible features that could house bats. Building surfaces and the ground around the structure will be surveyed for bat signs, such as guano, staining, and prey remains.</p> <ul style="list-style-type: none"> • Qualified biologists also will conduct evening emergence surveys at structures that contain suitable roosting areas. The surveys will consist of at least one biologist stationed near potential entry and exit points of the structure watching for emerging bats from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights at each survey location within the season that construction would be taking place. Surveys may take place over several nights to fully cover the extent of structure work. All emergence surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Survey methodology may be supplemented as new research identifies advanced survey techniques and equipment that would aid in bat detections. Acoustic detectors may be used during emergence surveys to obtain data on bat species present in the survey area at the time of detection. • If a building structure proposed for modification or demolition is identified as supporting an active bat roost, additional surveys may be required to 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>determine how the structure is used by bats—whether it is used as a night roost, maternity roost, migration stopover, or for hibernation.</p> <p><i>Identify Protective Measures for Bats Using Structures</i></p> <ul style="list-style-type: none"> • If it is determined that bats are using building structures within or adjacent to the construction area as roost sites, the University will coordinate with CDFW to identify protective measures to avoid and minimize impacts on roosting bats based on the type of roost and timing of activities. These measures could include, but are not limited to, the following. <ul style="list-style-type: none"> ◦ If a non-maternity roost is located within a structure that would be modified or disturbed in a manner that would expose the roost, bats will be excluded from the structure by a qualified wildlife management specialist working with a bat biologist. An exclusion plan will be developed in coordination with CDFW that identifies the type of exclusion material/devices to be used, the location and method for installing the devices, and monitoring schedule for checking the effectiveness of the devices. Exclusion devices will be installed between September 15 and October 31 to avoid affecting maternal and hibernating bat roosts and will take place during weather and 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>temperature conditions conducive to bat activity. Because bats are expected to tolerate temporary construction noise and vibrations, bats will not be excluded from structures if no direct impacts on the roost are anticipated.</p> <ul style="list-style-type: none"> ○ An alternative to installing exclusion devices would be to make structural changes to a known roost proposed for removal to create conditions in the roost that are undesirable to roosting bats and encourage the bats to leave on their own (e.g., open additional portals so that temperature, wind, light and precipitation regime in the roost change). Structural changes to the roost will be authorized by CDFW and will be performed during the appropriate exclusion timing (listed above) to avoid harming bats. ○ If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined that the roost is no longer active. 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
Impact LRDP-BIO-5: Conflict with a local policy or ordinance protecting biological resources, such as a tree preservation policy or ordinance	Mitigation Measure LRDP-BIO-5a: Avoid removal of protected trees Before a project is approved under the 2020 LRDP Update, the University will determine whether a tree that would be protected under the University's tree ordinance (i.e., any tree with a DSH of 24 inches or more and in good health or a native tree species with a DSH of 12 inches or greater and in good health) is present on the site. If a protected tree is present within the development footprint, the University will modify project design to avoid the protected tree, if feasible.	Determine whether a heritage tree is present on the project site; retain a qualified arborist to evaluate tree health, if necessary; modify project design to avoid heritage trees, if feasible.	DE	Prior to final design and project approval	Sacramento Campus Facilities Design and Construction
	Mitigation Measure LRDP-BIO-5b: Compensate for unavoidable loss of protected trees If avoidance is not feasible, the University will replace the removed heritage or specimen tree with the same species as any removed specimen tree at a ratio of 3:1.	Replace tree if avoidance is not feasible; document replacement of trees.	OC	Prior to occupancy of the building project that would require the removal of the heritage tree	Sacramento Campus Facilities Design and Construction

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
Archaeological, Historical, and Tribal Cultural Resources					
Impact LRDP-CUL-1: Potential to cause a substantial adverse change in the significance of a historical resource	<p>Mitigation Measure LRDP-CUL-1a: Prepare Historic Structure Report, adhere to Secretary of the Interior's Standards for the Treatment of Historic Properties, the California State Historical Building Code, and Relevant National Park Service Preservations Briefs</p> <p>Prior to renovating the Governor's Hall building, the University will retain a qualified historic preservation planner to prepare a historic structure report (HSR) for the building in accordance with National Park Service (NPS) Preservation Brief 43 (The Preparation and Use of Historic Structure Reports) and include mitigation measures in conformance with the Secretary of the Interior's Standards (SOIS) for the Treatment of Historic Properties or the California State Historic Building Code (CHBC). The HSR shall identify historic preservation objectives and requirements for the treatments and use of the building prior to initiation of renovations to ensure that the historical significance and condition of the building are considered in the development of proposed renovation work.</p> <p>The University will ensure that preservation treatment objectives outlined in the HSR for the Governor's Hall building seek to meet all SOIS for character-</p>	Retain a qualified historic preservation planner to prepare an HSR.	DE	Prior to final design and project approval	UC Davis Environmental Planning

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>defining features designated in the HSR as having primary significance status, and meet as many SOIS as feasible for those character-defining features designated as having secondary significance status. In instances when the university must address human safety issues not compatible with the SOIS, the university will adhere to the CHBC to the extent feasible. The CHBC is defined in Sections 18950–18961 of Division 13, Part 2.7 of Health and Safety Code and is a mechanism that provides alternative building regulations for permitting repairs, alterations and additions to historic buildings and structures. These standards and regulations are intended to facilitate the rehabilitation and preservation of historic buildings. The CHBC proposes reasonable alternatives so that a property’s fire protection, means of egress, accessibility, structural requirements, and methods of construction would not need to be modernized in a manner that compromises historic integrity. The CHBC is intended to allow continued, safe occupancy while protecting the historic fabric and character-defining features that give a property historic significance, thus promoting adherence to the SOIS. The CHBC recognizes that efforts to preserve the historic materials, features, and overall character of a historical resource at times may conflict with the requirements of</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>regular buildings codes. The Office of the State Fire Marshall has ultimate authority over health and safety and may require use of the standard building code in some instances.</p> <p>The University will use the HSR to help meet SOIS and CHBC requirements as it includes treatments that draw from National Park Service Preservation Briefs relevant to the proposed renovation work. The university will ensure that the HSR's historic preservation objectives and treatment requirements for the Governor's Hall building are incorporated into the design and construction specifications. The University will consult with the qualified preservation planner and with staff preservation architects within the Architectural Review and Environmental Compliance Unit of the State Office of Historic Preservation for guidance as needed. The university will ensure the HSR's historic preservation objectives and treatment requirements for the Governor's Hall building are incorporated into the proposed renovation specifications.</p>			
	<p>Mitigation Measure LRDP-CUL-1b: Implement Measures to avoid direct or indirect impacts on historic building or structures</p> <p>Before altering or otherwise affecting a building or structure 50 years of age or older, the University will retain a qualified architectural historian to record it on a</p>	Retain a qualified architectural historian to record and evaluate buildings and structures as specified.	DE	Prior to final design and project approval
				UC Davis Environmental Planning

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	California Department of Parks and Recreation DPR 523 form or equivalent documentation. Its significance will be assessed by a qualified architectural historian, using the significance criteria set forth for historic resources under State CEQA Guidelines Section 15064.5. The evaluation process will include the development of appropriate historical background research as context for the assessment of the significance of the structure in the history of the Sacramento Campus and the region.			
	<p>Mitigation Measure LRDP-CUL-1cb: Implement measures to avoid direct or indirect impacts on historic building or structures</p> <p>For a building or structure that qualifies as a historical resource, the qualified architectural historian and the University will consult to consider measures that would enable the project to avoid direct or indirect impacts on the building or structure. These could include preserving a building on the margin of the project site, using it “as is,” or other measures that would not alter the building. If alteration of a historic building or structure cannot be reasonably avoided, necessary alterations will be carried out in a manner consistent with the Secretary of the Interior’s Standards for the Treatment of Historic Properties (Section 15126.4(b)(1)). If the removal of a historic</p>	Consider measures to avoid impacts and incorporate into the project, as feasible; if avoidance is not feasible, retain a qualified architectural historical to document the building as specified.	DE Prior to final design and project approval.	UC Davis Environmental Planning

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	building or structure cannot be avoided, the University will ensure that a qualified architectural historian thoroughly documents the building and associated landscaping and setting. Documentation will include still and video photography and a written documentary record of the building to the standards of the Historic American Building Survey or Historic American Engineering Record, including accurate scaled mapping, architectural descriptions, and scaled architectural plans, if available.				
Impact LRDP-CUL-2: Potential to cause a substantial adverse change in the significance of an archaeological resource	<p>Mitigation Measure LRDP-CUL-2a: Conduct cultural resources sensitivity training</p> <p>Prior to any ground disturbance, construction crews will be required to attend a cultural resources sensitivity training. The training will focus on identifying potential archaeological resources as well as human remains. If potential archaeological resources or human remains are encountered, construction crews will be instructed to notify the University immediately.</p>	Include training in construction contract; complete informal training.	CO	Prior to commencement of ground disturbing activities	UC Davis Environmental Planning
	<p>Mitigation Measure LRDP-CUL-2b: Stop work in the event of discovery of an archaeological resource</p> <p>If an archaeological resource is discovered during construction, all project-related ground disturbance within 100 feet of the find will cease. The University will contact</p>	Include measure in construction contracts; verify that work is halted; retain archaeologist to assess find. If find is significant, implement additional measures as	CO	During construction upon discovery of a resource	UC Davis Environmental Planning

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	a qualified archaeologist within 24 hours to inspect the site. If a resource is determined to qualify as a unique archaeological resource (as defined by CEQA), and the University determines, in compliance with PRC 21083.2, which requires preservation in place as a first option, the University will devote retain a qualified archaeologist to conduct excavation to recover the material. Any archaeologically important artifacts recovered during monitoring will be cleaned, catalogued, and analyzed, with the results presented in an archaeological data recovery report.	specified, including documentation.		
Impact LRDP-CUL-3: Disturbance of any human remains, including those interred outside of dedicated cemeteries	<p>Mitigation Measure LRDP-CUL-3a: Retain qualified archaeologist</p> <p>As a first step during a project's environmental review, the University will determine whether the project being implemented under the 2020 LRDP Update is in the portion of the campus where human remains associated with the former burial ground could likely be encountered. If the project site is in or near that area, the University will retain a qualified archaeologist to review the project information and, as necessary, develop and implement a subsurface testing program to check for human remains. If no human remains are encountered, the project may proceed to construction. If human remains are</p>	Retain a qualified archaeologist to check for human remains, as described; confirm and document findings.	DE	Prior to final design and project approval
				UC Davis Environmental Planning

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	encountered, Mitigation Measure LRDP-CUL-3b will be implemented.				
	<p>Mitigation Measure LRDP-CUL-3b: Stop work if human remains are encountered</p> <p>In the event of a discovery on campus of human bone, suspected human bone, or a burial, all excavation within 100 feet of the find will halt immediately and the University will contact a qualified archaeologist or the County Coroner within 24 hours to determine whether the bone is human. Consistent with California Health and Safety Code Section 7050.5(b), which prohibits disturbance of human remains uncovered by excavation until the coroner has made a finding relative to PRC Section 5097.5 procedures, the University will ensure that the remains, and a reasonable buffer around the remains established in coordination with the coroner or archaeologist, are protected against further disturbance. If it is determined that the find is of Native American origin, the University will comply with the provisions of PRC Section 5097.98 regarding identification and involvement of the Native American Most Likely Descendant (MLD).</p> <p>If human remains cannot be left in place, the University will ensure that the qualified archaeologist and the MLD are provided opportunity to confer on archaeological treatment of human</p>	Include measure in construction contracts; verify that work is halted in the event of discovery of suspected human bone; retain archaeologist and contact County Coroner.	CO	During construction upon discovery of suspected human bone	UC Davis Environmental Planning
		Arrange for archaeologist to confer with MLD to develop appropriate treatment options; document repatriation or reinterment.	CO	During construction upon discovery of suspected human bone	UC Davis Environmental Planning
		Archaeologist to supervise excavation and burial, as described.	CO	During construction upon discovery of suspected human bone	UC Davis Environmental Planning

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification	
	<p>remains, and that appropriate studies, as identified through this consultation, are carried out prior to reinterment. The University will provide results of all such studies to the local Native American community and will provide an opportunity of local Native American involvement in any interpretative reporting.</p> <p>If the human remains are determined to be historic, the area of the project site will be excavated under the supervision of an archaeologist and all human remains and associated artifacts will be removed from the site and analyzed. After analysis, all recovered human remains and associated artifacts will be placed in caskets and buried in a single mass grave at a local cemetery.</p>				
Geology, Soils, and Seismicity					
Impact LRDP-GEO-1: Potential substantial adverse effects, including the risk of loss, injury, or death involving liquefaction	<p>Mitigation Measure LRDP-GEO-1: Conduct Geotechnical Investigation</p> <p>A site-specific, design-level geotechnical investigation will be conducted during the design phase of each building project under the 2020 LRDP Update. This investigation will be conducted by a licensed geotechnical engineer and include a seismic evaluation of ground acceleration under the design event as well as relevant soil conditions at the site. Geotechnical recommendations will subsequently be incorporated into the</p>	Retain a certified engineering geologist or licensed geotechnical engineer to conduct site-specific geotechnical investigation; document implementation of geotechnical recommendations.	DE	Prior to final design approval and project construction.	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	foundation and building design for the building project.				
Greenhouse Gas Emissions					
Impact LRDP-GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases	<p>Mitigation Measure LRDP-AQ-2e: Reduce operational PM10 emissions</p> <p>UC Davis will implement a program that incentivizes employees, students, residents, and visitors to carpool, use EVs, walk/bike, or use public transit to commute to and from the Sacramento Campus. The program will include, but is not limited to, the following features:</p> <ul style="list-style-type: none"> • Parking: Limit parking capacity to meet onsite demand and provide preferential parking to carpool vehicles, vanpool vehicles, and EVs. The program will implement the following parking related sub-measures. <ul style="list-style-type: none"> a. Provide no more onsite parking spaces than necessary to accommodate the number of employees working at a project site and/or the number of residents living at a project site, as determined by the project size and design. b. Where feasible, for future residential units (on-campus and Aggie Square Phase I), lease/sell parking space separately from the unit and provide the tenant the option of not purchasing/owning a space. 	Implement program to incentivize alternative commuting modes.	OP	On a continuing basis with annual reporting	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>c. Nonresidential land uses with 20 or more onsite parking spaces will dedicate preferential parking spaces to vehicles with more than one occupant and zero emission vehicles (including battery electric vehicles and hydrogen fuel cell vehicles). The number of dedicated spaces should be no less than two spaces or 5 percent of the total parking spaces on the project site, whichever is greater. These dedicated spaces will be in preferential locations such as near the main entrances to the buildings served by the parking lot and/or under the shade of a structure or trees. These spaces will be clearly marked with signs and pavement markings. This measure will not be implemented in a way that prevents compliance with requirements in the California Vehicle Code regarding parking spaces for disabled persons or disabled veterans.</p> <p>d. Maintain a virtual or real “ride board” for employees and students to organize carpools and incentives for employees using public transit to commute to and from campus</p> <ul style="list-style-type: none"> • Vendor Trips: Implement a program that incentivizes vendors to reduce the emissions associated with vehicles and equipment serving the UC Davis Sacramento Campus. The program will 			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>implement the following sub-measures to reduce vendor-related, mobile-source emissions.</p> <ul style="list-style-type: none"> a. Incentivize the use of electric vehicles or other clean fuels in their trucks and equipment. b. Work with vendors, especially those using trucks, to reduce the number of vendor trips made to the campus through trip chaining, reducing the number of shipments, or other methods. <ul style="list-style-type: none"> • Campus Shuttles: Work with Fleet Services to convert Med-Transit (onsite) shuttles to electric or a lower-emission fuels or implement emission control technologies to reduce criteria air pollutant emissions from existing conditions. • Pedestrian and Bicycle Infrastructure: Enhance walkability and connectivity of the Sacramento Campus to surrounding residential and commercial uses. The program will implement the following site design related sub-measures. <ul style="list-style-type: none"> a. Ensure all new external connections from the Sacramento Campus to existing or planned streets include bicycle/pedestrian access. b. Eliminate physical barriers such as walls, landscaping, and slopes that 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>impede pedestrian circulation throughout the Sacramento Campus.</p> <p>c. Require all new sidewalks internal and adjacent to the Sacramento Campus to be at least 5 feet wide. Provide grade separation and wider sidewalks (e.g., 7 feet), wherever feasible.</p> <p>d. Require all new sidewalks within the Sacramento Campus to include vertical curbs or a planting strip to separate the sidewalk from the parking or travel lane.</p> <p>e. Construct new roads within the Sacramento Campus to include at least one traffic calming feature, such as street parking, chicanes, horizontal shifts (lane centerline that curves or shifts), bollards, rumble strips, or woonerfs. Coordinate with the City of Sacramento to encourage these features on external roads connecting to the campus.</p> <p>f. Construct new intersections within the Sacramento Campus to include marked crosswalks, count-down signal timers, curb extensions, channelization islands, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, traffic circles or mini-circles. Coordinate with the City of Sacramento to encourage these</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>features on external intersections connecting to the campus</p> <ul style="list-style-type: none"> • Landscaping Equipment: Reduce emissions from landscaping equipment through the following sub-measures. <ol style="list-style-type: none"> a. Beginning in 2030, require UC Davis landscapers and contracted landscaping companies that maintain campus greenspaces to utilize electric or alternatively fueled mowers and handheld equipment (e.g., trimmers, blowers). b. Encourage xeriscape landscaping in all new campus greenspaces. 			
	<p>Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service</p> <p>During the 2020–2021 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline on-time performance metrics for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess on-time performance for routes operating on Broadway and Stockton Boulevard within</p>	Document transit enhancement efforts and progress; continue to work with SacRT staff.	OP Annually	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>the vicinity of the Sacramento Campus every two years over the 2020 LRDP Update planning horizon. During its standard project review process, UC Davis shall forecast and analyze traffic conditions on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus for individual development projects proposed under the 2020 LRDP Update that are expected to affect operations on these roadways. Relative to baseline levels, if operations on Broadway and Stockton Boulevard are found to cause transit services to fail to meet established standards or to worsen transit performance for services that already fail to meet established standards, or if a project-level analysis indicates the same, UC Davis shall institute TDM strategies to reduce peak hour vehicle trips and, in turn, delays to transit service on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus.</p> <p>The implementation of TDM strategies shall offset degradations to transit on-time performance in excess of established on-time performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update.</p> <p>Implementation of TDM strategies that would reduce delays to transit service on Broadway to Stockton Boulevard include</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>strategies to reduce vehicle travel to and from campus and to minimize the effect of campus operations on surrounding roadways. Specific potential TDM strategies include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Modify campus-operated shuttles to avoid Broadway and Stockton Boulevard, to the extent practical; • Promote walking and bicycling for student and employee trips to and from the UC Davis Sacramento Campus; • Expand public transit service, including additional service connecting campus with student and employee residential areas; • Implement a fair value commuting program or other pricing of vehicle travel and parking; • Provide carpool and/or vanpool incentive programs; • Allow flexible work hours and schedule classes to reduce arrivals/departures during peak hours; and • Offer remote working options. <p>The TDM strategies implemented to reduce delays to transit service at these locations will be consistent with existing and planned TDM programs on campus. If these TDM strategies are not sufficient to reduce delays to transit service per the criteria described above, additional TDM measures or adjustments to the measures</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	above shall be implemented, as needed to reduce peak hour intersection delay consistent with the criteria described above.				
	<p>Mitigation Measure LRDP-GHG-2: Implement Verifiable Actions or Activities or Purchase the Equivalent GHG Credits from a CARB Approved Registry or a Locally Approved Equivalent Program to Reduce GHG Emissions Generated by the Sacramento Campus</p> <p>As part of this mitigation measure, UC Davis is making the following separate, though overlapping, GHG emission reduction commitments: (1) As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program; (2) Per the UC Sustainable Practices Policy, Scope 1 and Scope 2 GHG emissions generated by the Sacramento Campus shall, commencing in 2025, be entirely carbon neutral; (3) Also per the UC Sustainable Practices Policy, commencing in 2050, Scope 1, Scope 2, and Scope 3 (commuting and air travel) emissions generated by the Sacramento Campus shall be voluntarily offset; and (4) UC Davis shall undertake additional action to achieve the following GHG reduction performance standards for the Sacramento Campus:</p>	Implement measure to reduce GHG emissions as specified, to achieve performance standards.	OP	During operation; ongoing documentation and review	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<ul style="list-style-type: none"> • By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 60 percent of emissions generated by the campus in 1990. • By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 20 percent of emissions generated by the campus in 1990. • By 2045 and thereafter, the Sacramento Campus shall achieve carbon neutrality. <p>GHG emissions generated by the Sacramento Campus in 1990 have been quantified as part of this Supplemental EIR and total 50,404 metric tons CO₂e. This yields the following GHG targets for the above performance standards.</p> <ul style="list-style-type: none"> • By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 30,242 metric tons CO₂e. • By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 10,081 metric tons CO₂e. • By 2045 and thereafter, GHG emissions generated by the Sacramento Campus shall not exceed 0 metric tons CO₂e. <p>It is possible that some strategies implemented under the below commitments could independently achieve the performance standards of this measure. Various combinations of strategies could also be pursued to optimize total costs or community co-benefits. UC Davis shall be responsible for</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>determining the overall mix of strategies necessary to ensure the performance standards to mitigate GHG generated by the Sacramento Campus. Each of the measure commitments is described in more detail below.</p> <p><i>Compliance with CARB's Cap and Trade Program</i></p> <p>Any carbon credits purchased for the purpose of compliance with CARB's cap and trade program shall be purchased from an accredited carbon credit market. Such credits (or California Carbon Offsets) shall be registered with, and retired² by an Offset Project Registry, as defined in 17 California Code of Regulations § 95802(a), approved by the California Air Resources Board (CARB) such as, but not limited to, Climate Action Reserve (CAR), American Carbon Registry or Verra (formerly Verified Carbon Standard). In order to demonstrate that the carbon credits 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 Davis shall document in its annual report: (i) the protocol used to develop those credits, and (ii) the third-party verification report</p>			

² 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.

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>concerning those credits. As and when the credits are retired, UC Davis shall document in its annual report the unique serial numbers of those credits showing that they have been retired.</p> <p><i>Compliance with the UC Sustainable Practices Policy</i></p> <p>Compliance with the UC Sustainable Practices Policy for carbon neutrality will be accomplished through reductions in direct emissions, the purchase of renewable electricity and possibly biomethane, and the purchase of carbon credits. UC Davis will purchase voluntary carbon credits as the final action to reach the GHG emission reduction targets outline 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's research, teaching, and public service mission. Specifically, any voluntary carbon credits used by UC Davis to comply with the UC Sustainable Practices Policy will:</p> <ol style="list-style-type: none"> 1. Prioritize local (within the Sacramento region) and in-state credits over national credits. Credits shall be third-party verified by a major registry recognized by CARB such as CAR. If sufficient local and in-state credits are 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>not available, UC Davis will purchase CARB conforming national credits registered with an approved registry.</p> <p>2. Be reported publicly and tracked through the Climate Registry (TCR) as required by the UC Sustainable Practices Policy. TCR is a non-profit organization governed by U.S. states and Canadian provinces and territories. UC Davis TCR reports will be third-party verified and posted publicly.</p> <p><i>Additional GHG Reduction Actions</i></p> <p>UC Davis shall do one or more of the following options to reduce GHG emissions generated by the Sacramento Campus to achieve the measure performance standards.</p> <p>1. Implement onsite GHG reduction actions on the Sacramento Campus (Option 1).</p> <p>2. Implement GHG reduction actions throughout the communities surrounding the Sacramento Campus in the City of Sacramento (Option 2).</p> <p>3. Purchase CARB verified GHG credits (Option 3).</p> <p>Each of the options is described in more detail below.</p> <p><i>Onsite GHG Reduction Actions</i></p> <p>Actions to reduce GHG emissions on the Sacramento Campus (Option 1) must exceed or not duplicate activities implemented pursuant to the UC</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>Sustainable Practices Policy. Potential actions may include, but are not limited to the following.</p> <ul style="list-style-type: none"> • (1)-1: All campus fleet vehicles scheduled for retirement shall be replaced with fuel efficient, LEV, ZEV, and/or alternative-fueled vehicles consistent with the needs of the campus. • (1)-2: New construction shall be required to employ solar roofs on at least 30 percent of roof square footage, unless mechanical equipment or other building specifications safely prohibit inclusion of solar roofs. The inclusion of solar roofs may be part of meeting LEED Silver or equivalent requirements. • (1)-3: Require use of natural alternatives to HFCs that are feasible and readily available for refrigeration and air conditioning. Natural refrigerants include ammonia, CO₂, or hydrocarbons. UC Davis shall require all future development to meet CARB regulations restricting HFCs, if and when adopted. <p>If UC Davis complies with the performance standards of this measure, as specified above, through implementation of onsite GHG reduction actions (Option 1), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through offsite GHG reduction</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>actions (Option 2) or procurement of GHG credits (Option 3).</p> <p><u>Offsite GHG Reduction Actions</u></p> <p>Actions to reduce GHG emissions throughout the surrounding community (Option 2) may include, but are not limited to the following.</p> <ul style="list-style-type: none"> • (2)-1: Develop a residential energy retrofit package in conjunction with the SMUD to achieve reductions in natural gas and electricity usage by the surrounding community. The retrofit package may include identification and sealing of dust and air leaks, installation of programmable thermostats, replacement of interior high use incandescent lamps with compact florescent lamps or LEDs, replacement of natural gas dryers with electric clothes dryers, replacement of windows with double-pane or triple-pane solar-control low-E argon gas filled wood frame windows, or other strategies selected by UC Davis in consultation with SMUD. • (2)-2: Develop a commercial energy retrocommissioning package in conjunction with SMUD to improve the energy efficiency of surrounding commercial buildings by at least 15 percent, relative to current (2019) energy consumption levels. 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<ul style="list-style-type: none"> • (2)-3: Develop a residential rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding homeowners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals. • (2)-4: Develop a commercial rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding business owners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals. • (2)-5: Partner with Sacramento Regional Transit to assess the feasibility of improving high-quality, regional transit serving the Sacramento Campus. <p>If UC Davis complies with the performance standards of this measure, as specified above, through implementation of offsite GHG reduction actions (Option 2), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through onsite GHG reduction</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>actions (Option 1) or procurement of GHG credits (Option 3).</p> <p><u><i>GHG Credits</i></u></p> <p>UC Davis may purchase GHG credits from a voluntary GHG credit provider that has an established protocol that requires projects generating GHG credits 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)). Definitions for these terms are as follows.</p> <ul 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 emissions must be comprehensively accounted for, including unintended effects (often referred to as "leakage"). • 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. 			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<ul style="list-style-type: none"> • 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. • Verified: GHG reductions must result from activities that have been verified. Verification requires third-party review of monitoring data for a project to ensure the data are complete and accurate. • Enforceable: The emission reductions from offset must be backed by a legal instrument or contract that defines exclusive ownership and the legal instrument can be enforced within the legal system in the country in which the offset project occurs or through other compulsory means. <p>GHG credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or forecasted mitigation units for future committed GHG emissions meeting protocols. All credits shall be documented per protocols functionally equivalent in terms of stringency to CARB’s protocol for offsets in the cap and trade program. If using credits not from CARB protocols, UC Davis must provide the protocols from the credit provider and must document why</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>the protocols are functionally equivalent in terms of stringency to CARB protocols.</p> <p>UC Davis shall identify GHG credits in geographies closest to the Sacramento Campus first and only go to larger geographies (i.e., California, United States) if adequate credits cannot be found in closer geographies, or the procurement of such credits would create an undue financial burden. UC Davis shall provide the following justification for not using credits in closer geographies in terms of either availability or cost prohibition.</p> <ul style="list-style-type: none"> • Lack of enough credits available in closer geographies (i.e., Sacramento County). • Prohibitively costly credits in closer geographies defined as credits costing more than 300 percent the amount of the current costs of credits in the regulated CARB offset market. • UC Davis documentation submitted supporting GHG credit proposals shall be prepared by individuals qualified in GHG credit development and verification and such individuals shall certify the following. <ul style="list-style-type: none"> ◦ Proposed credits meet the criteria in California Health and Safety Code Section 38562(d)(1) and (d)(2). ◦ Proposed credits meet the definitions for the criteria provided in this measure. 			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<ul style="list-style-type: none"> ○ The protocols used for the credits meet or exceed the standards for stringency used in CARB protocols for offsets under the California cap-and-trade system. <p><i>Measure Monitoring and Reporting</i></p> <p>As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program. Likewise, UC Davis 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 2050, as described above. These commitments will be incorporated into UC Davis' annual GHG inventory, which is used to track GHG emissions and sources on the Sacramento Campus. As part of the annual GHG inventory for the Sacramento Campus, UC Davis shall submit a report to The Regents specifying the annual amount of metric ton CO₂e reduction achieved by additional GHG reduction actions implemented pursuant to this mitigation (i.e., Option 1, onsite actions, and Option 2, offsite actions). The report must include evidence that these actions are not being used to mitigate GHG for any other project or entity.</p> <p>GHG reductions achieved by the onsite and offsite actions should be incorporated into the Sacramento Campus' annual GHG inventory. The estimated annual emissions</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	shall then be compared to the measure performance standards described above to determine the level of additional GHG reductions (if any). For the identified amount of exceedance of the performance standard(s), UC Davis shall purchase carbon credits according to the requirements established above under Option 3. As and when the credits are retired, UC Davis shall document in its annual report the unique identifier of those credits showing that they have been retired and accepted by TCR.				
Hazards and Hazardous Materials					
Impact LRDP-HAZ-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	Mitigation Measure LRDP-HAZ-2: Prepare a Phase I Environmental Site Assessment To minimize the risk of encountering unknown contamination during construction under the 2020 LRDP Update, the UC Davis Sacramento Campus would prepare a Phase I Environmental Site Assessment before all ground-disturbing construction in areas not previously investigated. A Phase I Environmental Site Assessment would conform with the American Society for Testing and Materials Standard Practice E1527-05 and include at a minimum the following site assessment requirements. <ul style="list-style-type: none"> • An onsite visit to identify current conditions (e.g., vegetative dieback, 	Conduct Environmental Site Assessment and document findings. Conduct remediation activities as necessary.	DE	Prior to final design approval and project construction	Sacramento Campus Facilities Design and Construction
		Monitor construction site, perform testing, and implement safety procedures, as necessary.	CO	Monitor construction site	Sacramento Campus Facilities Design and Construction

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>chemical spill residue, presence of above- or underground storage tanks).</p> <ul style="list-style-type: none"> • An evaluation of possible risks posed by neighboring properties. • Interviews with persons knowledgeable about the site's history (e.g., current or previous property owners, property managers). • An examination of local planning files to check prior land uses and any permits granted. • File searches with appropriate agencies (e.g., State Water Board, fire department, county health department) having oversight authority relative to water quality and groundwater and soil contamination. • Examination of historical aerial photography of the site and adjacent properties. • A review of current and historic topographic maps of the site to determine drainage patterns. • An examination of chain-of-title for environmental liens and/or activity and land use limitations. <p>If the Phase I Environmental Site Assessment indicates likely site contamination, a Phase II Environmental Site Assessment will be performed (also by an environmental professional).</p>			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>A Phase II Environmental Site Assessment would comprise the following.</p> <ul style="list-style-type: none"> • Collection of original surface and/or subsurface samples of soil, groundwater, and building materials to analyze for quantities of various contaminants. • An analysis to determine the vertical and horizontal extent of contamination (if the evidence from sampling shows contamination). <p>If contamination is uncovered as part of Phase I or II Environmental Site Assessments, remediation per EPA's RCRA regulations in 40 CFR Parts 260–299 will be required, and materials will be properly managed and disposed of prior to construction.</p> <p>Any contaminated soil identified on a project site must be properly disposed of in accordance with Department of Toxic Substances Control regulations in effect at the time.</p> <p>If, during construction, soil or groundwater contamination is suspected, construction activities will cease and appropriate health and safety procedures will be implemented, including the use of appropriate personal protective equipment (e.g., respiratory protection, protective clothing, helmets, goggles).</p>			

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
Hydrology and Water Quality					
Impact LRDP-WQ-3: Substantial alteration of existing drainage patterns in a manner that would result in substantial erosion or siltation onsite or offsite; substantial increase in the amount of surface runoff in a manner that would result in flooding onsite or offsite; creation of or contribution to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; alteration of the existing drainage pattern in a manner that would impede or redirect flood flows	Mitigation Measure LRDP-WQ-1: Implement a Subsoil Drainage System to Avoid Damage to Buildings In the event a subsoil drainage system is required (as determined by a geotechnical analysis), the system will be installed underground to remove excessive water from the soil, and avoid damage to buildings or landscaping. Groundwater from exterior building footings will be conveyed to a sump pump. The effluent will be pumped into the building storm drainage system. Subsoil drainage systems that cannot discharge to the storm sewer by gravity flow would be drained by gravity to sump pumps and will be pumped into the building storm drainage system. Each sump pump will be sized for 100 percent of the estimated design flow. Sump pumps will be connected to the emergency (standby) power system to permit operation during a loss of normal power. Design criteria for the subsoil drainage system will be defined by the geotechnical report.	Implement a subsoil drainage system, if required.	DE	Prior to final design approval	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
Noise					
Impact LRDP-NOI-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from construction activities in excess of applicable standards	<p>Mitigation Measure LRDP-NOI-1: Implementation of Measures to Reduce Construction Noise</p> <p>For construction activities associated with future projects under the 2020 LRDP Update, UC Davis will implement or incorporate the following noise reduction measures into construction specifications for contractor(s) implementation during project construction:</p> <ol style="list-style-type: none"> 1. Construction activities will be limited to the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday, when feasible. 2. Pile driving will not occur outside of the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday. 3. All construction equipment used for future projects will be equipped with suitable exhaust and intake silencers in good working order. All construction equipment will be properly maintained and equipped with intake silencers and exhaust mufflers and/or engine shrouds, in accordance with manufacturer recommendations. Equipment engine shrouds, if used, will be closed during equipment operation. 4. All construction equipment and equipment staging areas will be located 	Include measure in contract specifications; inspect construction site to verify measure is implemented.	CO	During construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>as far as possible from nearby noise-sensitive land uses, and/or located such that existing or constructed noise attenuating features (e.g., temporary noise wall or blankets) block line of sight between affected noise-sensitive land uses and construction staging areas, to the extent feasible.</p> <p>5. Individual operations and techniques will be replaced with quieter procedures (e.g., using welding instead of riveting, mixing concrete offsite instead of onsite) where feasible and consistent with building codes and other applicable laws and regulations.</p> <p>6. Stationary noise sources such as generators or pumps will be located as far as feasible from noise-sensitive land uses.</p> <p>7. No less than one week prior to the start of construction activities at a particular location, notification will be provided to academic, administrative, and residential or noise-sensitive uses (such as schools) located within 500 feet of the construction site.</p> <p>8. For any construction activity that must extend beyond the daytime hours of 7:00 a.m. and 6:00 p.m. on weekdays and Saturdays, and between 9:00 a.m. and 6:00 p.m. on Sundays, the construction contractor for that project will ensure that noise levels at the nearest noise-sensitive land use do not</p>			

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>exceed 55 dBA during the hours of 7:00 a.m. to 10:00 p.m. and 50 dBA during the hours of 10:00 p.m. to 7:00 a.m., as feasible. In addition to measures described above, the following measures may also help achieve this performance standard.</p> <p>a. Install temporary noise barriers as close as possible to the noise source or the receptor and located within the direct line-of-sight path between the noise source and nearby sensitive receptor(s). The barrier should be constructed of material that has a surface weight of at least 1 pound per square foot and has an acoustical rating of at least 25 STC (Sound Transmission Class). This can include a temporary barrier constructed with plywood support on a wood frame, sound curtains supported on a frame, or other comparable material.</p> <p>b. Use “quiet” gasoline-powered compressors or electrically powered compressors as well as electric rather than gasoline- or diesel-powered forklifts for small lifting, where feasible.</p> <p>c. Prohibit idling of inactive construction equipment for prolonged periods (i.e., more than 2 minutes).</p> <p>d. Retain a qualified noise specialist to conduct noise monitoring to ensure that noise reduction measures are</p>			

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	achieved the necessary reductions such that levels at the receiving land uses do not exceed 55 dBA during the hours of 7:00 a.m. to 10:00 p.m. and 50 dBA during the hours of 10:00 p.m. to 7:00 a.m.				
Impact LRDP-NOI-2: Generation of increased ambient noise levels in the project vicinity from operations in excess of applicable standards	Mitigation Measure LRDP-NOI-2a: Reduce Noise Exposure from Emergency Generators Prior to approval of a building permit for individual LRDP development projects proposing the installation of emergency generators, documentation will be submitted to the University demonstrating with reasonable certainty that noise from testing of the proposed generator(s) would not exceed 55 dBA at the nearest residential land use. Acoustical treatments to reduce noise from generator testing may include, but are not limited to, the following. <ul style="list-style-type: none"> • Enclosing generator(s) • Incorporating the use of exhaust mufflers or silencers to reduce exhaust noise • Selecting a relatively quiet generator model • Orienting or shielding generator(s) to protect noise-sensitive receptors to the greatest extent feasible 	Provide documentation related to expected generator noise; incorporate acoustical treatments, as necessary.	DE	Prior to final project approval	Sacramento Campus Facilities Design and Construction
		Conduct testing during hours specified.	OP	During operation	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<ul style="list-style-type: none"> Increasing the distance between generator(s) and noise-sensitive receptors Placing barriers or enclosures around generator(s) to facilitate the attenuation of noise. <p>In addition, all project generator(s) will be tested only between the hours of 7:00 a.m. and 10:00 p.m.</p> <p>All recommendations from the acoustical analysis necessary to ensure that generator noise would meet the above requirements will be incorporated into the building design and operations.</p>				
	<p>Mitigation Measure LRDP-NOI-2b: Reduce Noise Exposure from New Stationary Noise Sources</p> <p>During project design of individual projects proposed under the 2020 LRDP Update, UC Davis will review and ensure that noise-generating equipment, including heating and cooling equipment and exhaust fans, would not result in noise levels in excess of 50 dBA L_{eq} at the nearest residential land use. The project design will incorporate features to reduce equipment noise, as necessary, to ensure the 50 dB L_{eq} at nearby residential land uses is not exceeded. Design features that may be implemented to reduce noise include, but are not limited to: locating equipment within equipment rooms or enclosures that incorporate noise</p>	Provide documentation related to expected noise from new stationary sources; incorporate noise reduction design features, as necessary; complete an acoustical analysis, as necessary.	DE	Prior to final project approval	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	reduction features, such as acoustical louvers; incorporating exhaust and intake silencers, as applicable; or selecting quieter equipment. Should noise levels potentially exceed 50 dBA at the nearest residential land use, UC Davis may require the completion of a detailed noise control analysis (by a person qualified in acoustical analysis and/or engineering) that includes the incorporation of noise reduction measures (including quieter equipment, construction of barriers or enclosures, etc.) prior to the issuance of building permits.				
Impact LRDP-NOI-3: Generation of excessive groundborne vibration or groundborne noise levels	<p>Mitigation Measure LRDP-NOI-3a: Implement Measures to Reduce Vibration-Related Annoyance Impacts to Onsite Land Uses</p> <p>Should vibration-generating construction activities that do not involve pile driving be proposed within 140 feet of on-campus Category 1 buildings, or should pile driving activities be proposed within 500 feet of Category 1 land uses, the construction contractor will work with the University to identify vibration-producing activities on the construction schedule in advance. The construction contractor will coordinate the timing of the activities with hospital or research units that may be affected to reduce potential vibration-related annoyance effects on sensitive onsite hospital or research receptors. In addition, the construction contractor will</p>	Include measure in contract specifications; inspect construction site to verify measure is implemented.	CO	During project construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<p>appoint a project vibration coordinator who will serve as the point of contact for vibration-related complaints during project construction. Contact information for the project vibration coordinator will be posted at the project site and on a publicly available project website. The project vibration coordinator will be contacted should vibration effects become too disruptive at on-campus uses, and will then work with the construction team to adjust activities to reduce vibration or to reschedule activities for a less sensitive time.</p>				
	<p>Mitigation Measure LRDP-NOI-3b: Implement Measures to Reduce Vibration-Related Annoyance Impacts to Offsite Land Uses</p> <p>Should vibration-generating construction activities for future development under the 2020 LRDP Update (other than pile driving) be proposed outside of the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday, equipment must not operate within 100 feet of on-campus or off-campus residential (Category 2) land uses. Vibration levels at the nearest Category 2 land use will not exceed the applicable vibration criteria of 72 VdB. The contact information for the project vibration coordinator (described in Mitigation Measure LRDP-NOI-3a) will be posted at</p>	<p>Include measure in contract specifications; adjust activities, if necessary.</p>	CO	During project construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	the project site and on a publicly available project website. Should residents in the project area submit complaints to the project vibration coordinator for nighttime construction vibration concerns, the construction team will adjust activities to reduce vibration, or will reschedule activities for a less sensitive time such that vibration does not exceed 72 dB at nearby Category 2 land uses.				
	<p>Mitigation Measure LRDP-NOI-3c: Protect Adjacent Potentially Susceptible Structures from Construction-Generated Vibration during Pile Driving</p> <p>The construction contractor for development projects under the 2020 LRDP Update will consult with the University to determine whether adjacent or nearby buildings constitute structures that could be adversely affected by construction-generated vibration. For purposes of this measure, nearby potentially susceptible buildings within 100 feet of a construction site for a future development project will be considered if pile driving would be required at that site.</p> <p>If buildings adjacent to construction activity are identified that could be adversely affected, the project sponsor will incorporate into construction specifications for the proposed project a requirement that the construction contractor(s) use all feasible means to</p>	Include measure in contract specifications; implement additional measures and monitoring program, if deemed necessary.	CO	During project construction	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>avoid damage to adjacent and nearby buildings. Such methods to help reduce vibration-related damage effects may include maintaining a safe distance between the construction site and the potentially affected building (e.g., at least 100 feet for “historic and some old buildings”), or using “quiet” pile-driving technologies (such as predrilling piles or using sonic pile drivers).</p> <p>Should pile driving be required within 100 feet of a building in the “historic or some old building” category, within 75 feet of buildings in the “older residential structures” category, and within 55 feet of buildings in the “modern industrial/commercial category,” the University will work with the construction contractor to implement a monitoring program to minimize damage to adjacent buildings and ensure that any such damage is documented and repaired. If required, the monitoring program will include the following components:</p> <ul style="list-style-type: none"> • Prior to the start of any ground-disturbing activity, the project sponsor will engage a historic architect or qualified historic preservation professional to undertake a preconstruction survey nearby affected buildings that may be considered historic. For buildings that are not potentially historic, a structural engineer or other professional with 			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>similar qualifications will document and photograph the existing conditions of potentially affected buildings within 100 feet of pile-driving activity.</p> <ul style="list-style-type: none"> Based on the construction and condition of the resource(s), the consultant will also establish a standard maximum vibration level that will not be exceeded at any building, based on existing conditions, character-defining features, soil conditions, and anticipated construction practices (common standards are a peak particle velocity of 0.25 inch per second for “historic and some old buildings,” a peak particle velocity of 0.3 inch per second for “older residential structures,” and a peak particle velocity of 0.5 inch per second for “new residential structures” and “modern industrial/commercial buildings,” as shown in Table 3.11-4). To ensure that vibration levels do not exceed the established standard, the project sponsor will monitor vibration levels at each structure and prohibit vibratory construction activities that generate vibration levels in excess of the standard. Should vibration levels be observed in excess of the selected standard, construction will be halted and alternative construction techniques put in practice, to the extent feasible (e.g., predrilled piles could be substituted for 			

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	<p>driven piles, if feasible, based on soil conditions, or smaller, lighter equipment could be used in some cases).</p> <ul style="list-style-type: none"> The historic preservation professional (for effects on historic buildings) and/or structural engineer (for effects on non-historic structures) will conduct regular periodic inspections (every 3 months) of each building during ground-disturbing activity on the project site. Should damage to any building occur, the building(s) will be remediated to their preconstruction condition at the conclusion of ground-disturbing activity on the site. 				
Transportation and Circulation					
Impact LRDP-TRA-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities	<p>Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service</p> <p>During the 2020–2021 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline on-time performance metrics for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess on-time</p>	Document transit enhancement efforts and progress; continue to work with SacRT staff.	OP	Annually	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>performance for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus every two years over the 2020 LRDP Update planning horizon. During its standard project review process, UC Davis shall forecast and analyze traffic conditions on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus for individual development projects proposed under the 2020 LRDP Update that are expected to affect operations on these roadways. Relative to baseline levels, if operations on Broadway and Stockton Boulevard are found to cause transit services to fail to meet established standards or to worsen transit performance for services that already fail to meet established standards, or if a project-level analysis indicates the same, UC Davis shall institute TDM strategies to reduce peak hour vehicle trips and, in turn, delays to transit service on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus.</p> <p>The implementation of TDM strategies shall offset degradations to transit on-time performance in excess of established on-time performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update.</p>			

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>Implementation of TDM strategies that would reduce delays to transit service on Broadway to Stockton Boulevard include strategies to reduce vehicle travel to and from campus and to minimize the effect of campus operations on surrounding roadways. Specific potential TDM strategies include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Modify campus-operated shuttles to avoid Broadway and Stockton Boulevard, to the extent practical; • Promote walking and bicycling for student and employee trips to and from the UC Davis Sacramento Campus; • Expand public transit service, including additional service connecting campus with student and employee residential areas; • Implement a fair value commuting program or other pricing of vehicle travel and parking; • Provide carpool and/or vanpool incentive programs; • Allow flexible work hours and schedule classes to reduce arrivals/departures during peak hours; and • Offer remote working options. <p>The TDM strategies implemented to reduce delays to transit service at these locations will be consistent with existing and planned TDM programs on campus. If these TDM strategies are not sufficient to</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	reduce delays to transit service per the criteria described above, additional TDM measures or adjustments to the measures above shall be implemented, as needed to reduce peak hour intersection delay consistent with the criteria described above.				
	<p>Mitigation Measure LRDP-TRA-1b: Monitor transit service performance and implement transit service and/or facility improvements</p> <p>During the 2020–2021 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline transit performance (i.e., loading, productivity, and on-time performance) and safety metrics for routes operating within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess transit performance and safety for routes operating within the vicinity of the Sacramento Campus every two years over the 2020 LRDP Update planning horizon.</p> <p>Relative to baseline levels, if the performance of routes operating within the vicinity of the Sacramento Campus is found to fail to meet established standards or if performance worsens for services</p>	Monitor and document on-campus collisions and associated rates as specified; develop and implement countermeasures, including improvements, if necessary.	OP	During operation; ongoing documentation and review	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>that already fail to meet established standards, SacRT and other relevant transportation agencies shall implement transit service and/or facility improvements. The implementation of transit service and/or facility improvements shall offset degradations to transit performance in excess of established performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update.</p> <p>Currently, SacRT and other relevant transit operators regularly monitor transit service performance and adjust service levels, as feasible, according to established service standards. SacRT and other relevant transit operators would continue to implement this monitoring and service change process over the duration of the 2020 LRDP Update implementation. Moreover, UC Davis would continue to adjust campus-operated shuttle routes and schedules as warranted by passenger demand and other operating considerations. Additionally, nearby roadway owners such as the City of Sacramento and Caltrans operate and maintain their facilities consistent with their policies and standards related to multi-modal transportation operations. As requested, UC Davis shall meet with SacRT, the City of Sacramento, Caltrans, and/or other transportation agencies to</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>coordinate the implementation of transit service and/or facility improvements.</p> <p>Potential transit improvements include modifying existing transit routes or adding new routes to serve areas of the Sacramento Campus underserved by transit, adding service capacity (through increased headways and/or larger vehicles) to prevent chronic overcrowding, constructing transit priority treatments to improve service reliability (i.e., transit only lanes on Broadway and Stockton Boulevard, transit signal priority at traffic signals, etc.), improving terminal facilities to accommodate additional passengers and transit vehicles, and improving coordination between transit providers. Improvements should be selected based on existing performance data and targeted to address those areas not meeting established service standards (e.g., investing in transit priority treatments if on-time performance is the issue, or adding service capacity if vehicle loading is the issue).</p> <p>Transit facility and roadway improvements shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento, and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities (e.g., additional</p>			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	bus service that exceeds available bus stop or transit terminal capacity) or otherwise adversely affect transit operations.				
	<p>Mitigation Measure LRDP-TRA-1c: Monitor transit-related collisions and implement countermeasures to minimize potential conflicts with transit service and facilities</p> <p>During the 2020–2021 academic year and every 2 years thereafter, UC Davis shall record on-campus collisions involving a transit vehicle and establish a transit vehicle collision rate. The rate should be sensitive to transit provider, location context, and facility type (e.g., intersection versus segment). UC Davis shall determine the on-campus transit vehicle collision rate as part of a biennial mitigation monitoring program. In instances where the rate increases from the prior observation period, UC Davis shall develop and implement countermeasures that address collision hot-spots and common primary collision factors. UC Davis shall also identify and develop countermeasures for locations where the change in the mix of travel patterns and behavior is determined to be incompatible with the facility as designed. Potential countermeasures include physically separating modes in shared operating environments, particularly high- versus low-speed travel modes, and increased education and enforcement.</p>	Monitor and document traffic conditions as specified; forecast and analyze traffic conditions as specified; implement TDM strategies as necessary.	OP	During operation; ongoing documentation and review	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure		Timing	Verification
	Transit facility and roadway improvements that intend to minimize conflicts between transit vehicles and other travel modes shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento (for facilities within the City of Sacramento), and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities or otherwise adversely affect transit operations.				
Impact LRDP-TRA-5: Result in construction activity that could cause temporary impacts to transportation and traffic	<p>Mitigation Measure LRDP-TRA-5: Prior to the issuance of any grading or building permits, a Construction Traffic Management Plan (TMP) will be prepared to the satisfaction of UC Davis Health and the City of Sacramento Department of Public Works</p> <p>The Construction TMP will include items such as the following.</p> <ul style="list-style-type: none"> • Preserving emergency vehicle access routes to existing buildings on the Sacramento Campus • Providing truck circulation routes/patterns that minimizes effects on existing vehicle traffic during peak travel periods and maintains safe bicycle circulation • Monitoring for roadbed damage and timing for completing repairs 	Preparation of a Construction Traffic Management Plan.	DE	Prior to final project approval	Sacramento Campus Facilities Design and Construction

Project stage at which implementation of the measure is required:

SS = site selection; DE = detailed project planning or project design prior to project approval; CO = construction; OC = prior to occupancy; OP = operation.

Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<ul style="list-style-type: none"> • Preserving safe and convenient passage for bicyclists and pedestrians through/around construction areas • Creating methods for partial (i.e., single lane)/complete street closures (e.g., timing, signage, location and duration restrictions), if necessary • Identifying detour routes for roadways subject to partial/complete street closures • Identifying temporary UC Davis shuttle stops and detoured shuttle routes if existing stops or routes are affected • Identifying temporary SacRT bus stops and detoured bus routes, if existing stops or routes are affected • Developing criteria for use of flaggers and other traffic controls • Providing a point of contact for nearby residents, Sacramento Campus staff, students, and visitors, and other stakeholders to contact to obtain construction information and have questions answered <p>The Construction TMP will be developed so that the following performance standards are achieved throughout project construction.</p> <ul style="list-style-type: none"> • Maintain emergency vehicle access to all buildings on the Sacramento Campus at all times 			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<ul style="list-style-type: none"> • Maintain identified emergency vehicle routes to UC Davis Health medical facilities at all times. Notify appropriate contacts for UC Davis Health and/or emergency responders at least 24 hours prior to any construction-related partial/complete closures that may affect emergency vehicle routes, and provide clear identification of detours when necessary • Minimize construction traffic during morning and evening peak periods when street traffic on local and campus streets are highest • Close (i.e., partially or fully) any construction-related public roadways only during off-peak periods and provide appropriate construction signage, including detour routing • Limit detour routing to campus roadways or City collector and arterial roadways, such as Stockton Boulevard and Broadway, to the extent feasible. Include measures to minimize traffic increases on local residential roadways; this may include signage and law enforcement presence during partial/complete closures to discourage through-traffic use of local residential roadways • Clear roadways, sidewalks, crosswalks, and bicycle facilities of debris (e.g., rocks) that could otherwise impede 			

Project stage at which implementation of the measure is required:

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Impacts	Mitigation Measures	Monitoring and Reporting Procedure	Timing	Verification
	<p>travel and impact public safety, and maintain them in this condition</p> <p>UC Davis will also consider any concurrent construction activity and other active Construction TMPs when reviewing new Construction TMPs for specific LRDP implementation projects. This review will address the effects of simultaneous construction activity.</p>			

Chapter 1

Introduction

This chapter summarizes the purposes of the supplemental environmental impact report (Supplemental EIR) for the University of California, Davis (UC Davis) Sacramento Campus 2020 Long Range Development Plan Update (2020 LRDP Update) (project). The following discussion describes the California Environmental Quality Act (CEQA) requirements for this project, the intended uses of the Supplemental EIR, the Supplemental EIR scope and organization, and a summary of the agency and public comments received during the public review period for the Notice of Preparation (NOP) for the Supplemental EIR.

When certified, this Supplemental EIR, along with the 2010 LRDP EIR, will serve as the programmatic environmental document for overall expected growth at the Sacramento Campus and will be used for future ongoing tiering of CEQA environmental review when implementing specific projects within the 2020 LRDP Update. Within CEQA, “tiering” refers to basing the later CEQA analyses for specific future projects upon overall growth projections established in the programmatic document. Once approved, the 2020 LRDP Update will replace the 2010 LRDP as the planning document for decisions on campus growth and development. In addition, this Supplemental EIR provides detailed project analysis for the Aggie Square Phase I project (Volume 2 of this Supplemental EIR). The Aggie Square Phase I project is the first specific project expected to be implemented under the 2020 LRDP Update.

1.1 UC Davis Sacramento Campus: LRDP

The UC Davis Sacramento Campus serves as the key healthcare teaching, research, and patient care facility for the Sacramento region, most of Northern California, and parts of Western Nevada. The Sacramento Campus provides training for UC Davis students, ongoing regional training of healthcare professionals, and is a center for world-class healthcare research. With expected population growth in Northern California and specifically in Sacramento, the University of California is planning for campus facility expansion to 7.07 million gross square feet (gsf) and campus population growth to 21,200 with adoption of the 2020 LRDP Update to match with other planned UC Davis growth. Figure 1-1 provides a graphical overview of the Sacramento Campus growth program and the major initiatives planned for the Sacramento Campus.

UC Davis operates two primary campuses—the Davis campus provides overall university facilities in Davis on approximately 5,300 acres serving approximately 38,000 students and 12,000 employees. The Sacramento Campus is approximately 18 miles east of the Davis campus in the core of Sacramento on 146 acres with extensive teaching, research, and hospital facilities for 13,547 students, employees, visitors, and patients. Together, the two UC Davis campuses provide collaboration opportunities for approximately 40,000 students and 19,000 employees in medicine, engineering, biological sciences, law, veterinary medicine, agriculture and environmental sciences, humanities, and the arts. The potential environmental impact of the 2020 LRDP Update are evaluated in Volume 1 of this Supplemental EIR.

1.2 Aggie Square Phase I

At this time, UC Davis has one major expansion project proposed for project approval at the Sacramento Campus. The Aggie Square Phase I project involves substantial construction activity and will ultimately provide new buildings totaling more than 1 million square feet. Careful planning for Aggie Square Phase I site details will contribute to the long-term vision of building a world-class campus and will provide the necessary facility expansion to serve regional healthcare and research needs.

The Aggie Square Phase I project closely matches the 2010 LRDP planning vision and has prompted additional campus planning, both within the Aggie Square Phase I project site and throughout the Sacramento campus. This additional campus planning effort would slightly revise some of the expansion details and land use designations in the 2010 LRDP, which had a planning horizon to 2025. Updating the 2010 LRDP at this time with the 2020 LRDP Update will improve the site details for this project and will set a clearer and more refined physical planning guide for future growth at the Sacramento Campus.

The potential environmental impact of the Aggie Square Phase I project are evaluated in Volume 2 of this Draft EIR. While additional ideas for Aggie Square expansion beyond the Aggie Square Phase I project have been considered, those preliminary planning ideas are uncertain and are not proposed for approval at this time. The potential for future expansion of Aggie Square beyond the Phase I project would depend on economic factors, federal spending on research initiatives, overall occupancy of commercial space in the Sacramento region and the UC Davis internal demand for new research space. At this time, no funding, timelines, or planning details are available for the future potential expansion of Aggie Square Phase I.

1.2.1 Aggie Square: Lifelong Learning and Workforce Development

The Office/Lifelong Learning component of the Aggie Square Phase I is anticipated to include University programs and industry affiliates interested in continuing education and workforce development, including the training of next generation professionals across a broad variety of scientific disciplines. Together these activities will provide education and training for a wide range of jobs at Aggie Square, UC Davis and throughout the Sacramento region. By co-locating programs from youth development through post-professional training, an innovative ecosystem of educators and students will create new opportunities and value for UC Davis, as well as Sacramento residents and businesses.

UC Davis Continuing and Professional Education (CPE) is planning to serve as one of the key anchors of the Office/Lifelong Learning building. CPE is an academic division of UC Davis focused on workforce development and career advancement for adult learners, with more than 65,000 enrollments annually. CPE's plan is to move all of its regional public- and corporate-facing programs to Aggie Square, and to provide shared administrative services to other educational partners. More than half of CPE's existing work is sponsored training for groups of employees, often coupled with organizational development or coaching services.

CPE draws much of its strength in this area from the Health Informatics program at UC Davis School of Medicine. By bringing together the talent pipeline of Health Informatics graduates, the Project is an ideal location to site established and emerging companies in this competitive industry. With

these efforts and similar efforts that part of the Mayor's Workforce Collective, UC Davis, California State University, Sacramento and Los Rios Community College District are collaborating to identify the skills people in Sacramento will need to get and keep higher-wage jobs, and then developing the programs to provide those skills.

1.2.2 Aggie Square: Food Knowledge and Access

The new Alice Waters Institute for Edible Education at the University of California, Davis, will bring together experts from across disciplines such as education, health care, agriculture, policy and business to create new solutions for healthy, sustainable and equitable food systems. The collaboration participants have compiled an ambitious set of goals, including:

- **Benefit K-12 students** via education, policy and community engagement, coupled with Waters' aspiration to provide free, sustainable, healthy school lunches for all students
- **Foster curricular development** to support food-based learning and environmental stewardship across disciplines and at all levels of study
- **Produce systemic improvements** through interdisciplinary research of organic agriculture, carbon-reducing climate solutions, environmental education and public health scholarship
- **Use gardens and kitchens** as interactive classrooms for professional development of K-12 teachers and leaders, UC Davis faculty and students to teach lifelong food values and foster environmental stewardship
- **Host conferences, summits** and other public gatherings that bring together UC Davis faculty, students, researchers and other experts to address pressing challenges facing food systems and the planet
- **Lead interactive, hands-on projects** that support the sharing of best practices among K-12 educators, UC Davis faculty and students, and farmers, growers and ranchers who commit to sustainable practices for the land and their workers

Aggie Square is also leveraging UC Davis' strengths to address other concerns raised by community members. For example, Aggie Square has convened experts in medicine, education, agriculture and dietary science to examine food security issues in local neighborhoods.

1.2.3 Aggie Square: Sustainability

The Aggie Square Phase I project includes energy efficiency and low emissions efforts to model advanced sustainability design and construction details. With all electric heating, cooling, and lighting and partnering with the Sacramento Municipal Utility District Greenergy Program, the buildings will have substantially lower greenhouse gas emissions than standard buildings.

1.2.4 Aggie Square: Innovation, Education and Public Service

Leveraging its proximity to UC Davis Health, the state capital and community activists, the immersive Quarter at Aggie Square undergraduate program will address topics of societal concern from multidisciplinary perspectives. The first year's topics are transformative justice, health care equity, multilingual education and "bench-to-bedside" biomedical engineering.

Aggie Square is proposed as an innovation hub where UC Davis is creating new opportunities for research and public service, collaborating with public and private partners: community members, entrepreneurs, health innovators and policy leaders, as well as the business sector, government agencies and nonprofit organizations. Undergraduates can now capitalize on that synergy. Here are brief descriptions of the learning programs that will debut and potentially continue in the future:

- **Biomedical Engineering: A Bench-to-Bedside Experience at the UC Davis Health Campus** will give third-year biomedical engineering majors exposure to their field in the clinical environment, bringing engineering faculty together with medical departments.
- **Transformative Justice Studies in Sacramento** builds on long-standing relationships with community educational organizations in Sacramento to address issues of social justice.
- **Advancing Health Care Equity** will address the conundrum of inequity in health care delivery: People who most need health care often cannot access it.
- **Multilingual Education for California** addresses the urgent need for bilingual educators by training a cohort of Spanish-English bilingual teachers through courses in education and Latinx language and culture, and internship hours at the Language Academy of Sacramento (which is adjacent to Aggie Square).

1.3 LRDP Background

Each campus within the University of California system periodically prepares an LRDP to guide campus development in anticipation of projected growth of student enrollment and new University-added programs. An LRDP is defined as a “physical development and land use plan to meet the academic and institutional objectives for a particular campus or medical center of public higher education” (Public Resources Code [PRC] Section 21080.09(a)(2)). The LRDP establishes the land use patterns and relevant policies that guide the development of campus facilities and infrastructure. Much like a city or county general plan, the LRDP does not mandate growth or the provision of new facilities. Rather, 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 and growth. Varying factors affect whether campus population levels may increase, decrease, or remain unchanged and the provision of new facilities may or may not occur with the increased population. The 2020 LRDP Update does not set a future population capacity for the campus and does not indicate whether a future LRDP or LRDP update will be undertaken prior to or after the 2040 forecast year in the proposed 2020 LRDP Update Supplemental EIR. Further, the LRDP does not expire, and there is no set timeframe for when a new LRDP would be needed.

The Board of Regents of the University of California (The Regents) adopted the Sacramento Campus 2010 LRDP after certifying its EIR in November 2010. The 2010 LRDP requires updating to reflect new growth projections and plans. The 2010 LRDP, which has a 15-year planning horizon to 20205, envisions a campus consisting of the hospital and ancillary facilities, ambulatory care facilities, education and research facilities, a steam power plant, other infrastructure to support these activities, and off-street parking.

Since the adoption of the 2010 LRDP, several projects have been built on campus, including an expansion to the Ronald McDonald House on 49th Street, construction of the North Addition Office Building adjacent to the UC Davis Medical Center on V Street, and construction of the Moore Hall School of Nursing on 48th Avenue.

1.4 Purpose and Intended Uses of this Supplemental EIR

This Draft Supplemental EIR has been prepared under the Regents' direction in accordance with the requirements of the California Environmental Quality Act (CEQA) (PRC Sections 21000, *et seq.*) and the State CEQA Guidelines (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3, Sections 15000, *et seq.*). This EIR addresses the potential environmental effects of the proposed 2020 LRDP Update as well as the proposed Aggie Square Phase I project.

When certified, this Supplemental EIR, along with the 2010 LRDP EIR, will serve as the programmatic environmental document for overall expected growth at the Sacramento Campus and will be used for future ongoing tiering of CEQA environmental review when implementing specific projects within the 2020 LRDP Update. Once approved, the 2020 LRDP Update will replace the 2010 LRDP as the planning document for decisions on campus growth and development. In addition, this Supplemental EIR provides detailed project analysis for the Aggie Square Phase I project (Volume 2 of this Supplemental EIR).

The Regents serve as the lead agency under CEQA for consideration of certification of this Supplemental EIR and potential project approval; CCR Section 15367 defines the lead agency as the agency with principal responsibility for carrying out and approving a project. UC Davis Sacramento Campus is part of the University of California (University), a constitutionally created entity of the State of California, with "full powers of organization and government" (Cal. Const. Art. IX, Section 9). As a constitutionally created State entity, the University considers and provides authority for all land use decisions on property owned or controlled by the University that are used in furtherance of the University's education purposes.

According to CEQA, when the lead agency determines that the project may have a significant effect on the environment, the lead agency shall prepare an EIR (CCR Section 15064(f)(1)). An EIR is an informational document used to inform public agency decision makers and the general public of the significant environmental effects of a project, identify possible ways to mitigate or avoid the significant effects, and describe a range of reasonable alternatives to the project that could feasibly attain most of the basic objectives of the project while substantially lessening or avoiding any of the significant environmental impacts. Public agencies are required to consider the information presented in the EIR when determining whether to approve a project.

CEQA requires that public agencies consider the environmental effects of projects over which they have discretionary authority before acting on those projects (PRC Section 21000, *et seq.*). CEQA also requires that each public agency avoid or mitigate to less-than-significant levels, wherever feasible, the significant environmental effects of projects the agency approves or implements. If a project would result in significant and unavoidable environmental impacts (i.e., significant effects that cannot be feasibly mitigated to less-than-significant levels), the project can still be approved, but the lead agency must prepare and issue a "statement of overriding considerations" explaining in writing the specific economic, social, or other considerations that make those significant effects acceptable (PRC Section 21002; CCR Section 15093). The statement of overriding considerations must be supported by substantial evidence.

Section 1.10, Scope of the Draft Supplemental EIR, defines a program vs. project specific EIR.

1.5 Summary and Evaluation of the 2020 LRDP Update

Since 2010, the Sacramento Campus growth has been slower than expected in both new buildings and overall population. The 2020 LRDP Update largely continues the 2010 LRDP growth projection for new buildings and population at the Sacramento Campus but with minor increases in the total amount of expected growth and minor changes to the planned land uses. The 2020 LRDP Update also is a continuation of the planned efforts for facility expansion and a continuation of the type of growth expected at the campus. This Supplemental EIR assessment of the environmental impacts of the 2020 LRDP Update provides detailed information about the total expected growth and environmental impacts from current conditions through implementation of the 2020 LRDP Update.

CEQA analysis typically determines the significance of environmental impacts by comparing the proposed project to existing conditions. This approach describes the environmental impacts for that future condition by assessing the incremental impacts that implementing the proposed project would have on existing conditions.

Under some circumstances, CEQA analysis instead compares the proposed project to a future baseline condition that is already planned and that has been already analyzed in a certified EIR rather than comparing the proposed project to the existing conditions. This approach may be used when the future baseline condition has been thoroughly examined, and the environmental impact of that future baseline condition has already disclosed. Any subsequent CEQA analysis of a later action assesses the significance of environmental impacts by adding incremental changes of the later action to that already examined and disclosed future baseline condition. CEQA Guidelines Section 15162 describes this approach to subsequent analysis.

Notwithstanding this common practice for subsequent analysis, the already planned future baseline condition—the 2010 LRDP—is not the baseline condition for this Supplemental EIR. The baseline for this Supplemental EIR is the existing conditions in 2019. Another typical baseline scenario is the date of the Notice of Preparation (NOP). The NOP for this Supplemental EIR was released in February 2020. The most recent existing conditions data at that time were for the year 2019. For all impact areas, the 2019 baseline provides a more conservative analysis as there is no impact area for which the existing conditions have exceeded the 2010 LRDP projections.

The University has adopted this approach because minimal development has occurred since the publication of the 2010 LRDP Final EIR. As such, a comparison of the incremental impacts of the 2020 LRDP Update to the projected 2010 LRDP future growth would minimize the impacts of the 2020 LRDP Update and provide little meaningful information to the public and The Regents. Furthermore, the air quality section relies on the best available data (2019 data), to reflect current emissions, emission factors, and current air district thresholds that have changed since approval of the 2010 LRDP EIR. The noise chapter relies on current ambient traffic noise data to allow with-project traffic noise to be compared to existing data. In addition, new stationary sources can be captured by using existing data, rather than the assumptions in the 2010 analysis. The traffic section relies on 2019 data to show accurate traffic counts, which inform the air quality, GHG, and noise analyses. Accordingly, this Supplemental EIR describes the current, actual 2019 conditions for environmental resources. To accurately determine impacts, this Supplemental EIR evaluates the growth expected from the 2020 LRDP Update through 2040 as incremental changes compared to the 2019 existing conditions.

Comparisons to the 2010 LRDP EIR do not constitute the environmental impact analysis for this Supplemental EIR, and this Supplemental EIR does not provide impact determinations based on the 2010 LRDP impact comparisons. However, to provide additional context regarding the environmental impacts of the 2020 LRDP Update, this Supplemental EIR also describes some differences between the environmental impact conclusions of the 2010 LRDP EIR and the conclusions in this Supplemental EIR. This additional background information is provided to illustrate key changes in laws or policies since 2010 and may provide context for the amount or intensity of particular environmental impacts.

The 2020 LRDP Update Supplemental EIR uses the years 2030 and 2040 to forecast the potential environmental impacts of implementing the project elements described in the 2020 LRDP Update Supplemental EIR (see Section 2.8, *Planning Scenario for the 2020 LRDP Update* for further discussion). The 2020 LRDP Update Supplemental EIR identifies new and revised mitigation measures and will replace the existing 2010 LRDP EIR mitigation monitoring and reporting program.

1.6 Planning Process

UC Davis has determined that a Supplemental EIR will be required for the 2020 LRDP Update, and when the decision to prepare an EIR has already been made, CEQA states that an initial study is not required (CEQA Guidelines Section 15063(a)). As such, an initial study was not prepared.

In addition to analyzing the potential impacts of campus growth under the 2020 LRDP Update at a program level, this Supplemental EIR also analyses the potential project-specific environmental effects associated with Aggie Square Phase I.

The programmatic environmental analysis of the overall 2020 LRDP Update is provided in Volume 1 of this Draft Supplemental EIR. The Aggie Square Phase I project is described and evaluated at a project-specific level in Volume 2 this Supplemental EIR, incorporating information from Volume 1 as relevant, and expanding upon this information as needed.

The 2020 LRDP Update builds on prior campus planning efforts with projections for potential population growth and land use designations for new initiatives and projects. The 2020 LRDP Update is intended to accommodate growth in UC Davis' student, faculty, and staff campus populations while promoting compact built form, creating places for people to learn and interact, and advancing sustainability goals.

UC Davis began the planning process for the 2020 LRDP Update by engaging various campus stakeholders and the public throughout the past year, beginning in early 2019. UC Davis hosted quarterly public workshops to provide an overview of upcoming projects and overall LRDP growth.

Public outreach for the Aggie Square Phase I project began in the spring of 2019 with a series of public open houses at the Sacramento Campus focused on outreach and communication. In May of 2019, UC Davis presented a preliminary planning scenario for the Aggie Square project and conducted additional outreach for the campus community and within the city of Sacramento. Through the summer of 2019, UC Davis continued to refine the Aggie Square planning scenario and then conducted on- and off-campus public outreach in the fall of 2019. During the public outreach process, UC Davis listened carefully to the concerns and interests of both on- and off-campus commenters. The public feedback allowed UC Davis to incorporate many suggestions and to

consider options for certain suggestions that could not be accommodated. As a result of the public outreach process, UC Davis has made changes to the Aggie Square Phase I project. After the February 2020 CEQA NOP and scoping period, UC Davis carefully reviewed all of the agency and public comments to consider LRDP planning revisions and EIR issues for the 2020 LRDP Update Supplemental EIR. In addition, after the scoping period, UC Davis continued to interact with commenting and other agencies, including the City of Sacramento and the Sacramento Metropolitan Air Quality Management District.

1.6.1 Relationship with Other Campus Planning Efforts

The 2020 LRDP Update represents one of many planning efforts by UC Davis but serves as an overall guide for planning and development activities for the Sacramento Campus. The 2020 LRDP Update is largely a guiding document for the development of land and physical facilities (the organization, placement, sizing, and type) to aid UC Davis in implementing other campus planning efforts. Of the other campus planning efforts conducted by UC Davis, four types of planning documents (the strategic plan, the capital improvement plan, the physical design framework, and sustainability planning) are closely related to the 2020 LRDP Update and the 2020 LRDP Update is generally consistent with these planning efforts. The four types of planning documents are described below.

UC Davis Health 2017–2020 Strategic Plan

In 2015 UC Davis Health began the process of updating their strategic plan with feedback from the community. The goals of the strategic plan are as follows.

1. **Lead Person-Centered Care** in the best way, at the best time, in the best place, and with the best team.
2. **Reimagine Education** by cultivating diverse, transdisciplinary, life-long learners who will lead transformation in healthcare to advance well-being and equity for all.
3. **Accelerate Innovative Research** to improve lives and reduce the burden of disease through the discovery, implementation and dissemination of new knowledge.
4. **Improve Population Health** through the use of big data and precision health.
5. **Transform Our Culture** by engaging everyone with compassion and inclusion, by inspiring innovative ideas, and by empowering each other.
6. **Promote Sustainability** through shared goals, balanced priorities, and investments in our workforce and in our community.

UC Davis Medical Center Capital Improvement Program

Capital planning is a continuous and iterative process that evaluates the capital funding needs identified by academic plans and land use plans (2020 LRDP Update) and assesses alternatives to meet such needs in the context of anticipated capital resources. The *UC Davis Capital Financial Plan* is a comprehensive, multiyear plan that is informed by campus needs, resources, and priorities. The Capital Financial Plan identifies prospective projects to address need, estimates project budgets, and anticipate funding sources over a multiyear planning horizon. The plan also demonstrates critical unfunded needs, including new and renovated space for academic and research program expansion as well as seismic and deferred maintenance deficiencies. It is updated annually and requires endorsement by The Regents prior to implementation.

Physical Design Framework

The *UC Davis Sacramento Campus Physical Design Framework* (PhDF) describes a vision for creating a physical environment at UC Davis that supports the full range of activities at the campus, including hospital, outpatient, academic, and visitor activities. The PhDF, along with the LRDP, creates a foundation for planning, design, and building of future buildings, public spaces and circulation elements according to a clear set of design principles and guidelines. The PhDF is currently used by campus staff and outside consultants such as planners, architects, and landscape architects as they work to plan new facilities and other campus improvements in a cohesive way (University of California, Davis 2010).

Sustainability Actions and Plan

The *University of California Policy on Sustainable Practices* (UC Sustainable Practices Policy) was adopted by The Regents in 2006. The policy is regularly updated, with the most recent update occurring in July 2019 (University of California 2019). The policy goals encompass ten areas of sustainable practices: green building design, clean energy, climate protection, sustainable transportation, sustainable building operations, zero waste, sustainable procurement, sustainable food services, sustainable water systems, and sustainability at UC Health.

Refer to Sections 3.5, *Energy*; 3.7, *Greenhouse Gas Emissions and Climate Change*; and 3.16, *Utilities and Service Systems*, in Volume 1 of this Supplemental EIR for further information regarding UC Davis sustainability planning efforts.

1.7 Covid-19 Considerations

In December 2019, the U.S. Centers for Disease Control and Prevention (CDC) identified the first human cases of the COVID-19 coronavirus. In January 2020 the first case was identified in the United States, and the virus was identified in California in February 2020. In relation to these events, Governor Gavin Newsom declared a State of Emergency in California. As of June 2020, there were 117,687 confirmed cases and 4,361 fatalities in the state (California Department of Public Health 2020). On March 19, 2020, the State Public Health Officer issued an order directing all individuals living in the state to stay at home except as needed to perform essential activities. As of the writing of this document, COVID-19 continues to present a significant risk to the health of individuals throughout California, and the stay-at-home order is still in effect.

Due to these ongoing changes in our communities, there are many unknowns related to what the “new normal” will be after the COVID-19 pandemic. Likely assumptions include an increased potential for telecommuting, changes in traffic patterns, reduced public transit and shuttle use, and potential changes in demand for types of medical services (such as telemedicine). It is likely that avoidance of ride sharing or public transit due to social distancing at the same time that increased numbers of workers may continue with full- or part-time telework could occur and could have repercussions on future conditions. While these factors should be acknowledged, they are currently speculative and therefore cannot be considered in future conditions or in relation to potential impacts, as CEQA requires consideration of reasonably foreseeable outcomes and does not require consideration of changes that are speculative. The 2020 LRDP Update encompasses a long-term planning scenario, and assuming shift in transit patterns or teleworking as a result of the COVID-19 pandemic would be speculative, especially over a period of several decades.

1.8 Summary of the Notice of Preparation Process

CEQA requires an early and open process for determining the scope of issues that should be addressed in an EIR. The Notice of Preparation (NOP) provides formal notification to all federal, state, regional, and local agencies involved with funding or approval of the project, and to other interested organizations and members of the public, that an EIR will be prepared for the project. The NOP is intended to encourage interagency communication concerning the proposed project and to provide sufficient background information about the proposed project so that agencies, organizations, and individuals can respond with specific comments and questions on the scope and content of the EIR. A copy of the NOP is provided in Appendix A; the written comments received during the NOP comment period are provided in Appendix B. Comments received during public review of the NOP and at the public scoping meeting are summarized in a table at the beginning of Appendix B. A summary of the relevant NOP comments is provided at the beginning of each topical section in Chapter 3. The NOP is also available on the project website: <https://environmentalplanning.ucdavis.edu/sacramento>.

At the time of the NOP, the UC Davis Sacramento Campus included the Replacement Hospital Tower project as one of the first projects that would be developed under the 2020 LRDP Update. The purpose of the project is to address the Main Hospital's aging and seismically deficient structures. As described in the NOP, the project would include demolition of approximately 120,000 gross square feet (gsf) of the East Main Hospital Wing (East Wing) and the construction of a 600,000-800,000 gsf Replacement Hospital Tower project, including approximately 10,000 gsf of renovation to the existing Surgical Pavilion, construction of a new parking structure, and other make-ready projects such as utility relocation and Central Utility plant upgrades necessary to support the project.

At the time of the publication of this Supplemental EIR, the Replacement Hospital Tower project description is still being considered and defined. As stated in Section 1.7 above, the COVID-19 pandemic has resulted in uncertainty related to future planning, and the size of the future Replacement Hospital Tower is being carefully considered. Because there is uncertainty related to the size and timing of the project, it is no longer evaluated as a stand-alone project in this Supplemental EIR. Because the Replacement Hospital Tower is one of the future projects that would occur under the 2020 LRDP Update, it is included in the overall planning scenario for the 2020 LRDP Update growth projection along with other potential future projects. The Replacement Hospital Tower Project is anticipated to proceed promptly as a key initiative for UC Davis. While the details of the project remain uncertain at this time, the 2020 LRDP Update environmental impact assessment in this Supplemental EIR include the potential range of overall development that could occur as a result of the Replacement Hospital Tower project along with other potential projects during implementation of the 2020 LRDP update. Project specific CEQA analysis of the Replacement Hospital Tower project will be conducted at a later date.

1.9 Supplemental EIR Process

In accordance with PRC Section 21092 and CCR Section 15082, a NOP was prepared and circulated on February 7, 2020, for a minimum 30-day period of public and agency comment. The NOP was submitted to the State Clearinghouse and the Sacramento County clerk-recorder. A copy of the NOP is provided in Appendix A. A public scoping session was held February 26, 2020, at the Aggie Square Headquarters at 2270 Stockton Boulevard, Sacramento, California 95817. UC Davis staff and their

consulting team were available to answer questions and review draft project graphics and other information.

This Draft Supplemental EIR is being circulated for a 45-day period of review and comment by the public and other interested parties, agencies, and organizations. A virtual public hearing will be held on September 3, 2020 to receive input from agencies and the public on the Draft Supplemental EIR. The public can register to attend the virtual meeting by clicking on the link below.

<https://environmentalplanning.ucdavis.edu/sacramento>

Copies of the Draft Supplemental EIR are available on the UC Davis Environmental Planning website for review:

Online: <https://environmentalplanning.ucdavis.edu/sacramento>

Public libraries are currently closed due to the COVID-19 shelter in place order. However, hard copies of the document are available at the following locations:

- UC Davis Health Center, Facilities Design and Construction, 4800 Second Avenue, Suite 3010, Sacramento, CA 958178.
- UC Davis Office of Environmental Stewardship and Sustainability in 436 Mrak Hall on the UC Davis campus, Davis, CA 95616.

The public review period will conclude at 5:00 p.m. on September 16, 2020. All comments on the Draft Supplemental EIR should be addressed to:

Matt Dulcich, AICP
Director of Environmental Planning
Campus Planning and Environmental Stewardship
University of California
One Shields Avenue
Davis, CA 95616
environreview@ucdavis.edu

After the close of the public comment period, responses to written and oral comments on environmental issues will be prepared. Consistent with CCR Section 15088(b), commenting agencies will be provided a minimum of 10 days to review the proposed responses to their comments before any action is taken on the Final Supplemental EIR or project. The Final Supplemental EIR (consisting of this Draft Supplemental EIR and the Response to Comments document) will then be considered for certification (in accordance with CCR Section 15090) and approval by The Regents. If The Regents find that the Final Supplemental EIR is “adequate and complete,” The Regents may certify the Final Supplemental EIR in accordance with CEQA. The rule of adequacy generally holds that an EIR can be certified if:

1. The EIR shows a good faith effort at full disclosure of environmental information, and
2. The EIR provides sufficient analysis to allow decisions to be made regarding the proposed project with consideration given to its environmental impacts.

The level of detail contained throughout this Supplemental EIR is consistent with CCR Section 15151 of the CEQA Guidelines and recent court decisions, which provide the standard of adequacy on which this document is based. The CEQA Guidelines state as follows:

An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of the environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure. (CEQA Guidelines Section 15151)

CEQA requires that when a public agency makes findings based on an EIR, the public agency must adopt a reporting or monitoring program for those 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 Program for the project will be prepared and considered by The Regents in conjunction with the Final Supplemental EIR review.

1.10 Scope of the Draft Supplemental EIR

This Supplemental EIR is a program EIR, which is defined in Section 15168 of the CEQA Guidelines as: “An EIR addressing a series of actions that can be characterized as one large project and are related either:

- (1) geographically;
- (2) as logical parts in the chain of contemplated actions;
- (3) in connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or
- (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental impacts which can be mitigated in similar ways.”

A program EIR can be used as the basic, general environmental assessment for an overall program of projects developed over a multiyear planning horizon, and therefore is an appropriate review document for the 2020 LRDP Update. A program EIR has several advantages. For example, it provides a basic reference document to avoid unnecessary repetition of facts or analysis in subsequent project-specific assessments. It also allows the lead agency to consider the broad, regional impacts of a program of actions before its adoption and eliminates redundant or contradictory approaches to the consideration of regional and cumulative impacts.

Several resource areas will not be analyzed in detail in the Supplemental EIR, including agricultural and forestry resources, mineral resources, and wildfire. As stated in the NOP, the project site is listed as Urban/Built-up Land by the Farmland Mapping and Monitoring Program Sacramento County Important Farmland map. The project site is not zoned for agricultural use, and there are no parcels enrolled in a Williamson Act contract in the vicinity. There is no forest land or timberland in the vicinity. Development under the 2020 LRDP Update would not involve extraction of mineral resources and would not encounter unknown mineral resources through excavation so would not result in the loss of availability of a known mineral resource. In addition, no wildfire impacts are anticipated because the project site is in an existing urbanized area not within a fire hazard severity zone.

In addition to analyzing the potential impacts of campus growth under the 2020 LRDP Update at a programmatic level of overall growth, this Supplemental EIR also addresses the potential project-specific environmental effects associated with Aggie Square Phase I.

1.11 Responsible and Trustee Agencies

Under CEQA, responsible agencies are state and local public agencies other than the lead agency that have the authority to carry out or approve a project or that are required to approve a portion of the project for which a lead agency is preparing or has prepared an EIR. Trustee agencies are state agencies with legal jurisdiction over natural resources affected by a project that are held in trust for the people of the State of California.

The following agencies may have responsibility for or jurisdiction over implementation of elements of the project. The following list also identifies potential permits and other approval actions that may be required before implementation of certain project elements. Chapter 3 of this Supplemental EIR provides detailed analysis that explores further the potential for the need for responsible agency action.

This Supplemental EIR and any environmental analysis relying on this Supplemental EIR are expected to be used to satisfy the CEQA requirements of the listed responsible and trustee agencies. No approvals or permits are required from federal agencies.

1.11.1 State

- California Department of Transportation (Caltrans) (Responsible Agency)—To provide temporary access for construction within Caltrans rights-of-way.
- Central Valley Regional Water Quality Control Board (Responsible Agency)—To provide waste discharge requirements for impacts to waters of the State and stormwater pollution prevention plan for construction and operations.
- State Water Resource Control Board (Responsible Agency)—To provide coverage under General Construction and Industrial Storm Water permits.
- Central Valley Flood Protection Board (Responsible Agency)—To provide approvals for levee modifications, upgrades, and maintenance.

1.11.2 Local

- Sacramento Metropolitan Air Quality Management District (Responsible Agency)—To comply with stationary source permitting requirements (e.g., Authority to Construct and Permit to Operate).
- City of Sacramento (Responsible Agency)—Potential approval of roadway, bike path, sidewalk improvements.

1.12 Organization of the Draft Supplemental EIR

As noted above, this volume of the Draft Supplemental EIR is a programmatic evaluation of the impacts of the Draft 2020 LRDP Update. Volume 2 presents a project-specific evaluation of the Aggie Square Phase I project within the context of the 2020 LRDP Update, respectively. Both volumes are generally consistent in their structure in that they provide a detailed description of either the 2020 LRDP Update (this volume), Aggie Square Phase I (Volume 2), analysis of potential environmental impacts that could result from project implementation, and evaluation of potential alternatives pursuant to CEQA. Consistent with CEQA Guidelines Section 15168, the programmatic analysis of the 2020 LRDP Update includes an evaluation of cumulative impacts and other CEQA considerations that also serves as the analysis of cumulative and growth-inducing impacts for individual projects under the plan. The Aggie Square Phase I project is part of the 2020 LRDP Update, and therefore is included in the cumulative analysis provided in Chapter 5 of Volume 1 of this Supplemental EIR. A more detailed summary of the two volumes and the chapters contained within them is provided in Sections 1.12.1, *Volume 1*, and 1.12.2, *Volume 2*.

1.12.1 Volume 1

Executive Summary provides an overview of the environmental evaluation, including impact conclusions and recommended mitigation measures.

Chapter 1: Introduction describes the purpose, process, scope, and public outreach for this Supplemental EIR.

Chapter 2: Project Description describes the location of the project, the project background, existing conditions on the project site, and the nature and location of specific elements of the project.

Chapter 3: Existing Environmental Setting, Impacts, and Mitigation includes a topic-by-topic analysis of impacts that would or could result from project implementation. The analysis is organized in 16 topical sections. Each section includes a discussion of the environmental and regulatory setting, impact analysis, and mitigation measures.

Chapter 4: Cumulative Impacts provides information regarding the potential cumulative impacts that would result from implementation of the project together with other past, present, and probable future projects.

Chapter 5: Other CEQA Considerations includes a discussion of growth inducement, and unavoidable adverse impacts.

Chapter 6: Alternatives describes feasible alternatives to the project, including the No Project Alternative that describes the consequences of taking no action.

Chapter 7: EIR Authors and Persons Consulted identifies preparers of the Draft Supplemental EIR.

Chapter 8: References lists all resources used throughout the Draft Supplemental EIR.

Chapter 9: Acronyms and Abbreviations defines terms used throughout the Draft Supplemental EIR.

The **Appendices** contain a number of reference items providing support and documentation of the analyses performed for this report.

1.12.2 Volume 2

Executive Summary provides an overview of the Aggie Square Phase I project environmental evaluation, including impact conclusions and recommended mitigation measures, and other information required by CEQA Guidelines Section 15123.

Chapter 1: Introduction describes the purpose of the project-specific environmental impact evaluation, an explanation of its relationship to the 2020 LRDP Update Supplemental EIR, and the review and certification process for the project.

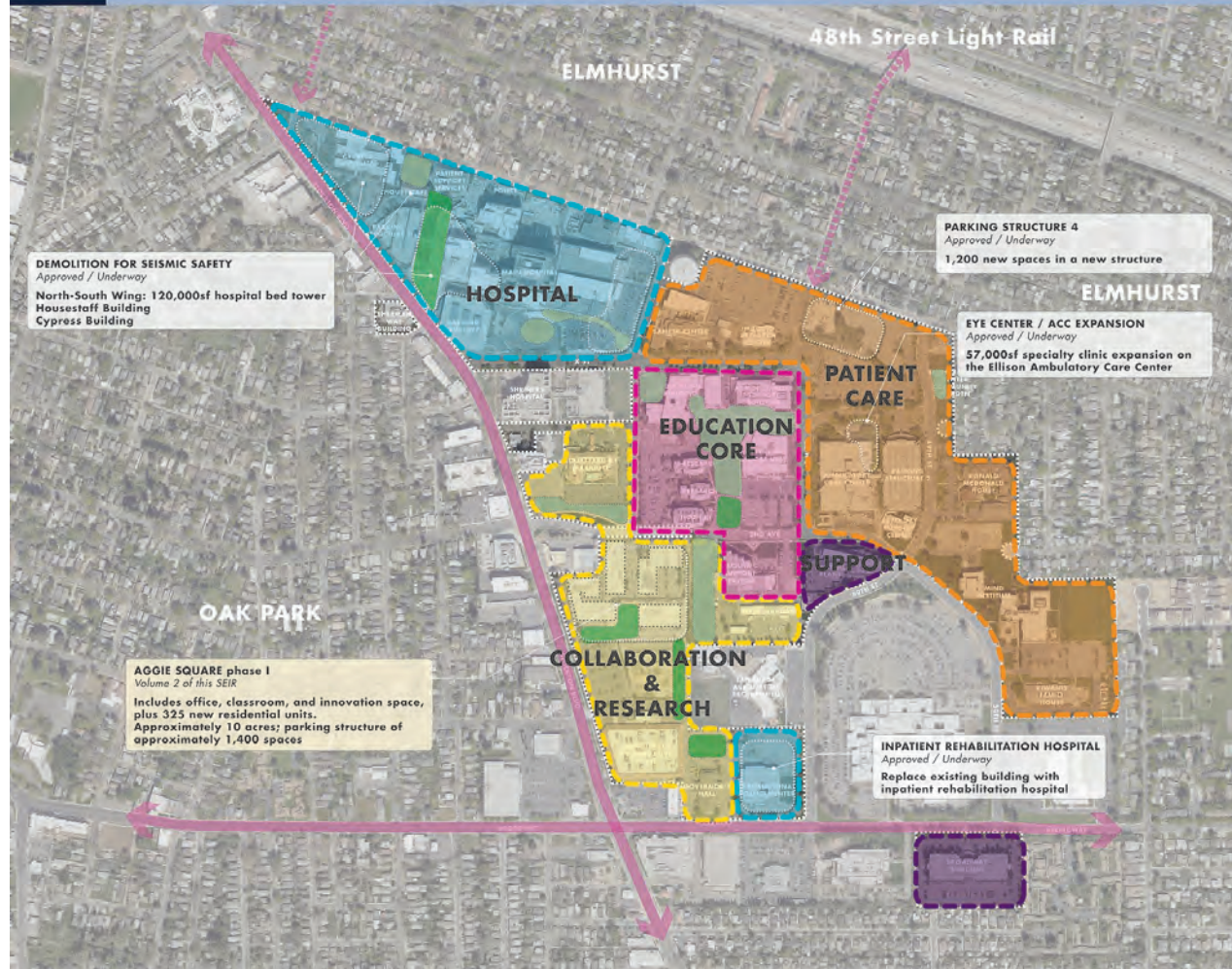
Chapter 2: Project Description describes the location of the project relative to the Sacramento Campus, its background, existing conditions at the site, and the nature and location of specific elements of the project.

Chapter 3: Existing Environmental Setting, Impacts, and Mitigation includes a topic-by-topic analysis of impacts specific to the project that would or could result from its construction and operation. The analysis is organized in a manner similar to Volume 1 and incorporates by reference, where appropriate, the programmatic analysis of the 2020 LRDP Update contained in Volume 1. A summary of the relevant NOP comments is provided at the beginning of each topical section in Chapter 3. Each section includes a discussion of the environmental and regulatory setting, impact analysis, and mitigation measures.

Chapter 4: Alternatives describes feasible alternatives to the project, including a No Project Alternative that describes the consequences of taking no action.

Chapter 5: References lists all resources used throughout the respective volume.

UC DAVIS SACRAMENTO CAMPUS LONG RANGE PLANNING



BUILDING SQUARE FOOTAGE PROJECTIONS

TOTAL SQUARE FOOTAGE PROJECTION: 7,070,000

EXISTING 2020	3,609,811	2,870,444	6,340,255	7,070,000
2030 ANTICIPATED GROWTH				529,745
ADDITIONAL GROWTH TO LRDP FORECAST				
TOTAL LRDP BUILDING SQUARE FOOTAGE				

CAMPUS POPULATION PROJECTIONS

TOTAL POPULATION PROJECTION: 21,200

EXISTING 2020	13,447	6,126	19,573	21,200
2030 ANTICIPATED GROWTH				1,527
ADDITIONAL GROWTH TO LRDP FORECAST				
FUTURE LRDP CAMPUS POPULATION				

CAMPUS PARKING PROJECTIONS

TOTAL PARKING PROJECTION: 12,000

EXISTING 2020	7,676	3,404	11,080	12,000
2030 ANTICIPATED GROWTH				920
ADDITIONAL GROWTH TO LRDP FORECAST				
TOTAL LRDP CAMPUS PARKING				

2.1 LRDP Introduction

The University of California system (UC system) consists of 10 campuses, 5 of which support health sciences programs that include teaching hospital facilities affiliated with medical schools: San Francisco, San Diego, Irvine, Los Angeles, and Davis. At the Davis Campus, the affiliation between the teaching hospital and the medical school is a single organization called the UC Davis Health System. UC Davis Health System includes UC Davis Medical Center, UC Davis School of Medicine, Betty Irene Moore School of Nursing, and UC Davis Medical Group. The UC Davis Sacramento Campus currently contains a state-of-the-art, 625-licensed-bed regional health care center that serves as the principal clinical teaching and research site for the UC Davis School of Medicine.

In support of its continued mission to provide a diverse array of leading academic programs, UC Davis is preparing a new Long Range Development Plan Update (2020 LRDP Update) to guide future growth and development on the Sacramento Campus. An LRDP is defined by statute (Public Resources Code Section 21080.09) as a “physical development and land use plan to meet the academic and institutional objectives for a particular campus or medical center of public higher education.” As discussed in Chapter 1, *Introduction*, the University of California (the University) adopted the 2010 LRDP as a guide for physical development to accommodate growth projected through 2025. The 2020 LRDP Update anticipates campus growth involving up to 7.07 million gross square feet (gsf) and an onsite daily population of 21,200 (including patients). The 2020 LRDP Update is intended to provide a flexible, attractive campus environment that accommodates current and future operations and facilities associated with this world-class medical institution. The 2020 LRDP Update makes minor adjustments to the land use designations and growth assumptions for the UC Davis Sacramento Campus to the year 2040.

This chapter presents a detailed description of the 2020 LRDP Update. It describes the plan’s location, setting, goals and objectives, and elements, as well as the permits and approvals that may be necessary during plan implementation. In addition to the programmatic evaluation of the 2020 LRDP Update contained in this volume (Volume 1), this supplemental environmental impact report (Supplemental EIR) includes a project-specific analysis of the Aggie Square Phase I project, discussed in Volume 2 of this Supplemental EIR.

2.2 Project Location and Setting

The UC Davis Sacramento Campus is in the Sacramento Valley of northern California in the city of Sacramento. The easternmost portion of the region is characterized by the Greater Sacramento Metropolitan region. The westernmost portion of the region primarily consists of the growing city of West Sacramento and outlying agricultural lands, which includes the Yolo Bypass. The landscape pattern is influenced by development sprawling from the cores of existing cities and the major roadways, such as Interstate (I-) 80, U.S. Route 50, I-5, and State Route 99. The region primarily supports developed, industrial, agricultural, and open space land uses. In addition to numerous creeks and irrigation channels, major water bodies in the region include the Sacramento River, the

American River, the Deep-Water Ship Channel, and the Yolo Bypass when flooded. The Sacramento Campus is approximately 11 miles southeast of the Sacramento International Airport and three miles southeast of the Sacramento Valley Station, which serves as a terminal for Amtrak. The Sacramento Valley Station is also the western terminus on the Sacramento Regional Transit's light rail gold line, which runs from the Sacramento Valley Station in downtown Sacramento to the city of Folsom. The gold line parallels U.S. Route 50 just north of the Sacramento Campus, and the nearest transit stops are the 39th and 48th Street stations.

Some of the transportation challenges that the Sacramento region faces are urban sprawl and reliance on single-occupancy vehicles. The Sacramento Area Council of Governments (SACOG) provides transportation planning and funding for the SACOG region, which includes the counties of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba. According to the SACOG *Sacramento Area Regional Progress Report* (Sacramento Area Council of Governments 2017), the regional transportation trends indicate that carpooling has declined and commuting via bicycle has increased slightly from 1.3 percent to 1.7 percent. Transit ridership (light rail and bus) is 0.6 service hours per year in the SACOG region. According to SACOG, the service metric is service hours, which are the number of hours transit vehicles are providing revenue service. This metric currently counts only fixed route/fixed schedule service, and not demand responsive service. The ridership metric is passenger boardings. Both are normalized to population and presented as per capita rates. The vehicle miles traveled (VMT) is higher in the SACOG region than in Los Angeles or the San Francisco Bay Area (Sacramento Area Council of Governments 2017). Within Sacramento County, the population growth rate is about 0.8 percent. The population is expected to grow from 1,546,174 in 2019 to 1,799,258 by 2040 (California Department of Finance 2019, 2020). With an increasing population that continues to rely on automobiles, the region faces challenges in meeting initiatives to reduce greenhouse gases (GHGs).

The UC Davis Sacramento Campus is in the hub of the Sacramento Metropolitan Region off U.S. Route 50 near the State Route 99/Business 80 interchange in the city of Sacramento (Figures 2-1 and 2-2). UC Davis Health includes a 625-bed teaching hospital, a National Cancer Institute-designated Comprehensive Cancer Center, and a nationally ranked children's hospital. In 2018–2019, UC Davis Medical Center had over 34,000 inpatient admissions, over 80,000 emergency room visits, and over 900,000 clinic or office visits. Figure 2-3 shows the existing character of the campus.

2.2.1 Project Site

The UC Davis Sacramento Campus is approximately 146 acres and is approximately 2.5 miles southeast of downtown Sacramento and 17 miles east of the UC Davis main campus in Davis. The Sacramento Campus is bounded by V Street on the north, Stockton Boulevard on the west, Broadway to the south, and a residential neighborhood to the east.

The University owns several properties surrounding the campus site, including buildings along Stockton Boulevard and Broadway. The University also leases offsite facilities in Sacramento for clinics and offices totaling over 500,000 square feet. Leased spaces and other off-campus buildings west of Stockton Boulevard and south of Broadway, are not part of the 2020 LRDP Update plan area and are outside the scope of this Supplemental EIR. However, the Broadway Building is located south of Broadway and is owned and operated by the University which is included within the plan area. Figure 2-4 shows the existing conditions of the Sacramento Campus.

2.2.2 Surrounding Land Uses

Land uses surrounding the campus site are residential neighborhoods composed of single-family homes and some commercial and urban development (Figure 2-2). Stockton Boulevard, along the western boundary of the campus, is lined mostly with one- to three-story office buildings and a small amount of retail. A Shriners Hospital is located on Stockton Boulevard just south of X Street across from the UC Davis Health System Main Hospital. The Main Hospital is at 2351 Stockton Boulevard, with commercial uses on the other side of Stockton Boulevard and the Elmhurst neighborhood to the northwest (Figure 2-4).

The Elmhurst neighborhood to the north and east of the campus is a residential neighborhood consisting primarily of single-family homes. To the west (west of commercial business buildings along Stockton Boulevard) is the North Oak Park neighborhood, with a mix of single-family and multi-family residences. These neighborhoods can be characterized as pre-World War II traditional neighborhoods. Multi-family residential is the predominate land use in the Fairgrounds neighborhood to the southwest of the campus. Figure 2-5 shows the character of the bordering land uses.

Several public institutions and offices are located between the southern edge of the campus and Broadway. The Marian Anderson School, Sacramento County Department of Social Services, State Department of Justice and Law Enforcement and State Employment Development Offices are along 49th and 50th Streets and north of Broadway. The Department of Motor Vehicles and Sacramento County Coroner and Crime Lab Building and other public uses are south of Broadway and west of the Broadway Building. The Broadway Building, which is an office building owned by the UC Davis Health System, houses administrative offices and is part of the 2010 LRDP and 2020 LRDP Update plan areas. The Fairgrounds neighborhood southeast of the Sacramento Campus consists primarily of single-family and multi-family residential uses.

2.3 2020 LRDP Update

The 2020 LRDP Update includes amending the existing 2010 LRDP to make minor adjustments to the land use designations and growth assumptions that were envisioned in the 2010 LRDP.

The 2020 LRDP Update proposes the following changes:

- Include 4 acres of land for the Rehabilitation Hospital project (west of Stockton Boulevard and south of Broadway, as shown on Figure 2-8) and incorporate this land within the Sacramento Campus boundary. This land is already part of the Sacramento Campus, but has not been formally incorporated into the LRDP for the campus. With the 2020 LRDP Update, these 4 acres would be within the plan area for a total of 146 acres.
- Revise the Education and Research land use designation to include residential housing. This designation would now be Education, Research, and Housing. This land use is generally on the southwestern portion of the Sacramento Campus.
- Height restrictions would be revised throughout the Sacramento Campus. Under the 2010 LRDP, height restrictions were based on land use designations as follows:
 - Within the Education and Research land use designation, buildings heights were limited to five stories above grade (75 feet).

- Within the Hospital land use designation, building heights were limited to three stories (45 feet) to a distance of 100 feet from the property line. Heights up to 6 stories (90 feet) beyond 100 feet from the property line, and 14 stories (230 feet) beyond 180 feet from the property line were allowable under this land use designation.
- Within the Ambulatory Care land use designation, building heights were limited to three stories (45 feet) above grade to a distance of 100 feet from the property line. Heights up to five stories (75 feet) beyond 100 feet from the property line were allowable under this land use designation.
- Within the Support land use designation, building heights were limited to four stories (60 feet) above grade.
- The 2020 LRDP Update removes the height restrictions by land use designation and proposes a campus-wide maximum height of 200 feet with setback requirements to ensure there is a buffer between the Sacramento Campus and the residential neighborhoods to the north and east of the campus. Along the commercial corridors of Stockton Boulevard and Broadway, the setback requirements largely mirror the City of Sacramento height standards for consistency. New setback requirements are also proposed around the Language Academy of Sacramento. The 200-foot campus-wide height maximum does not include mechanical penthouses and other ancillary roof uses. It also conforms to Federal Aviation Administration height restrictions related to helicopter use. Overall, height restrictions are higher in the Education, Research, and Housing land use designation compared to the 2010 LRDP but would be similar in other land use designations. Proposed height restrictions and setback requirements are listed below.
 - Along the northern and eastern campus boundaries, a series of setbacks address the surrounding residential community:
 - 0–40 feet from the edge of campus: buffer (zero height)
 - 40–100 feet from the edge of campus: 40 feet maximum height
 - 100–180 feet from the edge of campus: 75 feet maximum height
 - Along Stockton Boulevard, a setback addresses the mid-rise commercial corridor:
 - 0–50 feet from the edge of campus: 85 feet maximum height
 - 50–100 feet from edge of campus: 120 feet maximum height
 - Adjacent to the Sacramento Language Academy, a series of setbacks address the school:
 - Northern and southern boundaries of the Sacramento Language Academy:
 - 0–40 feet from the edge of campus: buffer (zero height)
 - 40–100 feet from the edge of campus: 75 feet maximum height
 - Western boundary of the Sacramento Language Academy:
 - 0–40 feet from the edge of campus: buffer (zero height)
 - Along Broadway, height restrictions address the low-rise commercial corridor:
 - North side of Broadway:
 - 0–100 feet from the edge of campus: 35 feet maximum height
 - South side of Broadway:

- 35 feet maximum height
- The Office of Planning and Research (OPR) recommends that VMT serve as the primary traffic analysis metric, replacing the existing criteria of delay and level of service. In 2018, OPR released a technical advisory outlining potential VMT significance thresholds for different project types. This Supplemental EIR includes a VMT analysis to calculate impacts on traffic and GHGs.

2.4 Objectives of the 2020 LRDP Update

Following are the specific objectives of the 2020 LRDP Update.

- Provide additional state-of-the-art inpatient and outpatient capacity to keep pace with community health care needs and to support the UC Davis Health System's teaching, research, and community engagement missions.
- Facilitate growth in student enrollment and the implementation of major educational initiatives, such as the School of Public Health, to address the existing and projected need for health care professionals and other highly trained, multidisciplinary professionals in the state of California.
- Support growth in workforce development and lifelong learning, including the Continuing and Professional Education program.
- Provide the facilities and infrastructure required to facilitate continued growth of the research enterprise at the Sacramento Campus, especially to foster interaction and collaboration between all campus programs and disciplines.
- Create an expansive and inclusive community of people focused on advancing health-contributing to the well-being of people in the communities we serve, propelling a more diverse and healthier economy and expanding the positive impact of UC Davis Health through more expansive partnerships.
- Support access to jobs and services to a more diverse population, including providing housing and transportation opportunities and community-serving uses.
- Address the constraints to intellectual exchange and collaboration resulting from the dispersed offsite locations of some of the UC Davis Health System educational and research programs.
- Address seismic and other code-related deficiencies in aging buildings, replacing them with state-of-the-art facilities for health care and health-care related research.
- Implement sustainable site design and building design practices to support ongoing implementation of the UC Sustainable Practices Policy.

In addition to the project objectives, the planning principles regarding physical development of the 2020 LRDP Update are listed below.

- Ensure appropriate facility adjacencies.
- Improve campus open space and landscape character.
- Provide convenient access to and within the campus.
- Improve pedestrian connections throughout the campus.

- Provide attractive campus entries and edges.
- Continue to plan and operate a sustainable campus.

2.5 Elements of the 2020 LRDP Update

The 2020 LRDP Update involves modifications to the land use plan established as part of the 2010 LRDP to support potential growth and development. UC Davis anticipates that under the 2020 LRDP Update, the on-campus population could grow over the next 20 years to include a population of 21,200, which is approximately 1,481 over the 2010 LRDP projection for 2025. UC Davis also anticipates growth up to 7.07 million gsf, which is approximately 499,202 gsf above what was analyzed in the 2010 LRDP.

The 2020 LRDP Update includes land owned and operated by the University, as well as public/private partnerships owned by the University and operated by on-campus leaseholders which are referred to as On-Campus Partner Buildings uses. Existing On-Campus Partner Buildings are the Courtyard by Marriott and the Ronald McDonald House. On-Campus Partner Buildings to be constructed in the future will be Aggie Square Phases I, potential expansion of Aggie Square Phase I, and the Rehabilitation Hospital.

2.5.1 Campus Population

The daily onsite population consists of all persons present on the campus on a given day. This population includes UC Davis Health System patients and visitors, staff, faculty and other academic personnel, students, interns, residents, and fellows. The approximate onsite daily population in 2019 was 13,547.

The 2010 LRDP did not include on-campus housing or residential use as a land use activity. The 2020 LRDP Update would include on-campus housing, or residential use, as a land use activity and therefore includes a new projection of campus housing. As shown in Table 2-1, total onsite daily campus population is anticipated to increase to about 21,200 by 2040, which is 7,653 above baseline conditions and 1,481 above what was analyzed in the 2010 LRDP Final EIR.

Table 2-1. Existing and Projected Daily Onsite Population

Population Summary	2019	2040	Projected Increase
Sacramento Campus			
Employees	7,030	12,189	5,159
Students	1,902	2,832	930
Patients and Visitors	4,615	5,768	1,153
Residents	0	411	411
Total	13,547	21,200	7,653

Notes: On-Campus Partner Buildings are public/private partnerships between UC Davis and another entity.

The existing population for existing On-Campus Partner Buildings (approximately 250 people) is not included in these daily onsite population totals because these buildings are not owned or operated by UC Davis. The number of employees in these buildings is not anticipated to change between 2019 and 2040.

The 411 residents represent the new on-campus housing associated with Aggie Square Phase I. There would be an additional 175 units built on campus between 2030 and 2040; those residents would comprise a mix of employees, students, and their dependents who may live on campus in the future and are accounted for in the daily onsite population presented above.

2.5.2 Building Space and Parking Projections

Table 2-2 summarizes the existing and projected building space on the Sacramento Campus. Total building space on the 146-acre campus, excluding parking structures, would increase from approximately 6.57 million gsf under the 2010 LRDP to 7.07 million gsf upon full implementation of the 2020 LRDP Update. Parking structure square footage would increase by 2,012,897 gsf by 2040, and there would be 4,324 additional parking spaces on campus between parking structures and surface parking. Open space would also increase by 13 acres by 2040.

Table 2-2. LRDP Building Space and Parking Summary

Land Use Type	Existing (2019)	Proposed (2040)	Change
Building Square Footage (gsf)	3,669,811	7,070,000	3,400,189
Parking Spaces	7,676	12,000	4,324

2.5.3 Land Use Designations

The 2020 LRDP Update proposes general types of campus development and land uses to support projected campus population growth and enable expanded and new program initiatives: Ambulatory Care; Education, Research, and Housing; Hospital; Landscape Buffer; Major Open Space; Parking Structure; and Support. The land use categories are the same except Education and Research will now be Education, Research, and Housing. The existing land use scenario is shown in Figure 2-6, and the proposed land use scenario for the 2020 LRDP Update is shown in Figure 2-7. As shown in Figures 2-6 and 2-7, the land use changes are relatively minor. Table 2-3 shows the changes in acreages per land use category.

Table 2-3. 2020 LRDP Update by Land Use Designation

	Existing (2019) (acres)	2020 LRDP Update Proposed 2040 (acres)	Projected Change with 2020 LRDP Update
Ambulatory	32.69	31.39	-1.3
Education, Research, and Housing	28.11	29.85	1.74
Hospital	25.74	24.08	-1.66
Landscape Buffer	7.56	6.77	-0.79
Major Open Space	9.65	13.04	3.39
Parking Structure	13.25	16.22	2.97
Support	16.31	13.13	-3.18
Total Area in LRDP Land Use Categories ^a	133.31	134.48	

^a The Total Area is less than the overall campus acreage because streets are not included in the land use category acreages.

Ambulatory Care

The Ambulatory Care land use designation would allow for new ambulatory care facilities, other new clinical and research uses, and relocation of clinical and research uses that may be returned

from off-campus leased locations in areas adjacent to the Sacramento Campus. Complementary uses such as temporary family stay facilities (Ronald McDonald and Kiwanis Houses), skilled nursing facilities, and assisted living facilities would be included in this land use category. Housing for students, faculty, and staff could be located in the Ambulatory Care area. Existing surface parking would be consolidated into nearby structures, although several large parking lots, each with more than 100 spaces, are likely to remain in this area. The Eye Center would be in the Ambulatory Care land use designation. Other changes in this land use category include an expansion of the Cancer Center. The Sacramento Language Academy is also in this land use designation; as stated above, new height restrictions and setbacks are proposed around this building. Sun and shade studies would be conducted if any potential future development along the west edge of the school is considered.

Education, Research, and Housing

This Education, Research, and Housing land use category was formerly Education and Research. The Education, Research, and Housing land use designation includes the existing and planned schools (Medicine, Nursing, and Public Health). Education, Research, and Housing facilities include classrooms, lecture halls, research laboratories, associated support space, residential housing and related uses, and offices. This land use designation also includes facilities to support daily student life such as food services and dining, a bookstore, lounges and recreation facilities, such as the Recreation/Wellness Center. The Education, Research, and Housing land use designation would include sufficient area to meet projected program needs, especially for the anticipated growth in research endeavors. Surface parking lots for less than 100 cars would also be built within this land use designation. Over time, existing parking is likely to be consolidated to the periphery of this area, in order to support a more pedestrian-friendly, auto-free environment. The Aggie Square development and associated residential housing would be located in the Education and Research land use designation. As shown in Table 2-3, acreage in this land use category is increasing by 1.74 acres.

Hospital

The Hospital land use designation would include the existing hospital facilities and would allow for the long-term expansion and replacement of those facilities. The Hospital land use designation would include adequate area for the addition of new facilities while retaining critical operations of existing facilities. Anticipated facilities under this designation would include facilities for patient care, nursing, clinical services, surgery and affiliated uses. In addition, ancillary support uses, such as administrative, police and security, open spaces, utility structures, dining and food service, and patient and visitor lounges could also be built, consistent with the objectives and planning principles related to adjacencies for efficiency and pedestrian movement. The Hospital land use designation would include a limited amount of surface parking and would allow for parking structures to be sited near the hospital to allow for convenient access for patients and visitors. New patient facilities such as a future hospital bed-based clinic would occur in this land use category. The acreage in this land use category is decreasing by 1.66 acres due to the demolition of the North-South wing.

Landscape Buffer

Residential neighborhoods are present along the northern and eastern sides of the campus. This land use designation refers to a 40-foot landscaped setback along V Street and 49th Street and along the east side of the campus. No new buildings or permanent parking would be constructed or allowed within the setback area. Additional setbacks adjacent to the buffer are described in Section

2.3 above. While this acreage is decreasing (0.79 acre), it is largely a result of shifting the Cancer Survivor's Park from landscape buffer to the Major Open Space land use designation.

Major Open Space

The Major Open Space land use designation encompasses only major malls and quads envisioned for the Sacramento Campus; smaller courtyards, plazas, and quads would be developed throughout the campus in conjunction with new building development. Major open spaces are designated as a separate land use to indicate the importance of their location and approximate configuration. There would be changes to the main quad, located in the center of the education and research area, as well as minor changes to the two major malls that would link the Hospital, Ambulatory Care, and Education, Research, and Housing land uses. Primary open spaces would be designed to include major pedestrian walkways and locations for special events such as graduation ceremonies. Secondary open spaces would include building-related courtyards with amenities such as benches and shade to provide an outdoor destination for patients, visitors, students, faculty, and staff. The neighborhood landscape buffers would remain. The Major Open Space designation is increasing by 3.39 acres (Table 2-3).

Parking Structure

The 2020 LRDP Update would accommodate a range of parking locations and configurations that support the overall improvement of the campus environment. As the campus grows, much of the surface parking would be consolidated into parking structures. Surface parking lots would likely remain in several of the other land use designations. Parking provisions consistent with the Americans with Disabilities Act and applicable building codes, and service and short-term parking would also be provided throughout the campus adjoining individual buildings as appropriate. Parking structures would conform to the height limitations noted above for the various campus land use areas. As shown in Table 2-3, this land use category is increasing by 2.97 acres.

Support

Additional support facilities needed to serve the campus under the 2020 LRDP Update would be consolidated in the existing Support land use designation area of the campus, which includes the Central Energy Plant, the Facilities Support Services Building, Fleet Services, the Courtyard Marriott Hotel, and administrative services and administrative uses (the Broadway Building). This land use would allow utility structures, administrative offices, hotel, plus fleet maintenance, repair, and storage uses. Surface parking (lots with less than 100 spaces) may remain in this area or may be consolidated into nearby parking structures. The seismic retrofit and reuse of the Broadway Building would occur in this land use category. Acreages in this land use category would be reduced by 3.18 acres because land currently used for fleet services would be converted to Education, Research, and Housing uses as part of the Aggie Square Phase I project.

2.6 Regulatory Updates

The 2020 LRDP Update incorporates regulatory changes since adoption of the 2010 LRDP Final EIR. A recent assessment by the California Air Resources Board (CARB) makes clear that the state “is not on track to meet greenhouse gas reductions expected under SB 375” (California Air Resources Board 2018). Senate Bill (SB) 743 (passed in 2013) is intended to close the VMT and emissions reduction

gap. SB 743 requires revisions to the California Environmental Quality Act (CEQA) Guidelines that establish new impact analysis criteria for the assessment of a project's transportation impacts. The intent behind SB 743 and revising the CEQA Guidelines is to integrate and better balance the needs of congestion management, infill development, active transportation, and GHG emissions reduction. The OPR recommends that VMT serve as the primary analysis metric, replacing the existing criteria of delay and level of service. Unlike the 2010 LRDP, which relied on level-of-service (LOS), the 2020 LRDP Update includes a transportation analysis that relies on VMT.

2.7 Access and Circulation

The 2020 LRDP Update generally maintains the current campus access and circulation patterns. Primary vehicular access points would remain at:

- Stockton Boulevard at X Street
- Stockton Boulevard at 2nd Avenue
- Broadway at 50th Street

Additional key access points include Stockton Boulevard at Colonial Way, Stockton Boulevard at Y Street, and V Street at 49th Street.

The proposed Aggie Square Phase I project would extend 3rd Avenue easterly from Stockton Boulevard into the UC Davis Sacramento Campus. This would provide an additional access point and would primarily serve traffic to and from the Education, Research, and Housing areas of the campus between 2nd Avenue and Broadway.

The 2020 LRDP Update also anticipates the addition of a new mobility hub at 45th Street north of 2nd Avenue, which would provide a centralized transit center.

In addition, the 2020 LRDP Update anticipates potential changes in traffic control at several intersections on the campus. This includes reconfiguring the existing traffic circle at X Street/48th Street as a conventional four-leg intersection with a traffic signal, new traffic control devices along 2nd Avenue to facilitate traffic flow and improve pedestrian crossings, and potential driveway turn restrictions to reduce collision potential.

Lastly, excess vehicular capacity on some internal roadways may be addressed by removing through travel lanes and replacing them with either bicycle facilities, on-street parking, and/or curb space for pick-up/drop-off activity, where warranted.

The 2020 LRDP Update proposes new Class II bicycle lanes on 48th Street to connect existing bicycle lanes on X Street and buffered bicycle lanes on 2nd Avenue, consistent with the *City of Sacramento Bicycle Master Plan*. In addition, a protected intersection is proposed to replace the existing traffic circle at the intersection of X and 48th Streets to facilitate bicycle travel to the Class I shared-use path along the 48th Street alignment between V and X Streets.

The City of Sacramento proposes a Class IV separated bikeway on Stockton Boulevard from Broadway to T Street along the Sacramento Campus frontage. The *City of Sacramento Bicycle Master Plan* identifies this project as a near-term priority that requires a feasibility study to determine how it would be implemented.

2.8 Public Services and Utilities

2.8.1 Police Protection

UC Davis has its own police department with a number of sworn officers and protective service officers that are assigned to the Sacramento Campus.

2.8.2 Fire Protection

The Sacramento Fire Department provides fire protection services to the Sacramento Campus. The closest fire stations to the campus are Fire Station 6, at 3301 Martin Luther King Jr. Boulevard, approximately 0.6 mile to the west, and Station 4 at 3145 Granada Way, approximately 1 mile to the north.

2.8.3 Utilities and Infrastructure

The campus contains a well-developed utility infrastructure. Table 2-4 presents the current utility demand estimates for 2019 and the projected demand in 2040. Refer to Section 3.16, *Utilities and Service Systems*, for an in-depth analysis regarding utility capacity.

Table 2-4. Campus Utility Demand

Utility	Existing Consumption (2019)	Proposed Consumption (2040)	Change
Potable water (gallons)	147,746,630	260,483,018	112,736,388
Non-potable water (gallons)	28,342,170	70,520,476	42,178,306
Electricity (kilowatt-hours)	15,833,943	60,940,412	45,106,468
Natural Gas (therms)	11,698,753	13,016,053	1,317,300
Diesel Fuel Oil (boilers) (gallons)	12,472	15,918	3,446
Onsite Gasoline Dispensing (gallons)	40,489	51,677	11,188
Waste (tons)	4,374	6,666	2,292
Emergency Power	7 generators	15 generators	8 generators

Source: Air Quality/Greenhouse Gas data collection effort.

Potable and Irrigation Water

The City of Sacramento (City) provides potable water to the campus. This water is used for domestic, fire protection, central plant, and irrigation uses, though some of the irrigation demand is met by well water on the campus. Under existing conditions, the campus demand is approximately 176.1 million gallons of water each year (potable and non-potable).

Under future 2020 LRDP Update conditions in the anticipated horizon year of 2040, the estimated annual water demand at the campus would be about 331 million gallons (potable and non-potable). Existing and new buildings would be required by building codes and UC Sustainability Practices Policy to be retrofitted with low-flow or water-conservation plumbing fixtures that would conserve water to achieve a lower flow rate under future conditions.

Wastewater

Sanitary sewer flows are discharged into the City's combined sewer system. Wastewater from the campus is conveyed to the City of Sacramento combined sewer and stormwater facilities. It is treated at the Sacramento Regional Wastewater Treatment Plant (SRWTP), which is owned and operated by the Sacramento Regional County Sanitation District (Regional San). The SRWTP is south of the city in Elk Grove, approximately 7 miles south of the Sacramento Campus.

Stormwater

The existing campus land area consists of approximately 80 percent impervious and 20 percent pervious surfaces. The majority of the campus area discharges stormwater into the City's combined sewer system, which serves both stormwater runoff and domestic sewer discharge. Stormwater from western portion of the campus flows via the City storm drains to the American River.

Central Energy Plant

The Sacramento Campus Central Energy Plant was installed in 1998 and provides cooling, heat, and power. This plant provides all the campus' normal power, most of the emergency power, chilled water, medium temperature hot water, and steam. The projected steam capacity is expected to grow to 7,500 pounds per hour. A Utility Master Plan was prepared for the campus in January 2019 (Affiliated Engineers, Inc. 2019). The Utility Master Plan projects that the existing cogeneration steam system and high-pressure boiler, as well as the distribution system mains, have sufficient capacity to serve the 2020 LRDP Update through horizon year 2040. Refer to Section 3.16 for an in-depth analysis regarding the capacity of the Central Energy Plant and other utilities.

Solid Waste

Solid waste is separated into appropriate waste streams. Medical waste and hazardous chemical and radioactive waste are packaged and labeled and categorized for transport to appropriate off-campus disposal sites. The UC Davis landfill, located on the western edge of the Davis Campus, closed in August 2012 and has a landfill closure plan in place. This landfill consists of a methane collection and monitoring system that utilizes collected landfill gas to power microturbines at the onsite UC Davis Biodigester facility.

The UC Davis Sacramento Campus disposes of nonrecycled and nonhazardous solid wastes at Republic Services Elder Creek Transfer Station in Sacramento, where it is then transported to Forward landfill in Manteca (approximately 55 miles south). UC Davis Health will continue to implement its Integrated Waste Management Plan, including waste reduction and recycling elements.

2.8.4 Sustainability

The University is committed to responsible stewardship of its physical resources and to demonstrating leadership in sustainable practices. To that end, the UC Board of Regents (The Regents) have adopted the UC Sustainable Practices Policy, which includes water, wastewater, energy, and GHG reduction. As part of implementing this policy, UC Davis has planned reductions in GHG emissions to meet the GHG emissions reduction targets established by the University. The University's goals for GHG reduction are to be carbon neutral (i.e., net zero annual GHG emissions)

for Scope 1 and 2 emissions by 2025 (not including commuting emissions) and carbon neutral for Scope 1 through 3 emissions (including commuting emissions) by 2050. The UC Sustainable Practices Policy is discussed further in Section 3.7, *Greenhouse Gas Emissions*.

2.9 Planning Scenario for the 2020 LRDP Update

This document evaluates a projection of potential growth with the anticipation that the updated Sacramento Campus LRDP would guide campus growth for the next 20 years. For the University, LRDPs do not have a completion or an end date. For purposes of this Supplemental EIR, the following assumptions have been made to add additional detail to the project description so that the environmental impact analysis is both realistic and sufficiently discloses the potential environmental impacts of the project. These assumptions for the Supplemental EIR are as follows.

- Environmental impact analysis uses a projection through the year 2040.
- From 2020 to 2030, an assumption that certain potential projects would form the basis for the amount of growth in the first 10 years of the 2020 LRDP Update. From this assumption we extrapolate maximum yearly construction impacts during the first decade of implementation of the 2020 LRDP Update.
- From 2030 to 2040, an assumption that additional growth for the 2020 LRDP Update could take place by 2040 and that the additional growth would occur in equal annual amounts through the 2040 projection year. Project details are less known in the second decade of the anticipated growth and this assumption distributes the remaining LRDP growth post-2030 in equivalent yearly increments.
- The project description for the Replacement Hospital Tower project, which was identified in the NOP, is still being refined. While the size, design, and timing of the project has not yet been determined, the demolition of the East Wing and construction of a new facility was included in the planning scenario of the 2020 LRDP Update. The project will undergo additional environmental review at a later date.

Figure 2-8 shows the location of new known and potential projects planned for the 2020 LRDP Update. Appendix C contains a list of known and potential projects that are likely to occur between 2020 and 2040, as well as assumptions (such as square footage) used for the analysis in this Supplemental EIR. The annual campus growth projections are also included in Appendix C.

2.10 Additional Analysis Related to the 2020 LRDP Update

In addition to functioning as a program EIR for the potential overall growth of the Sacramento Campus, this Supplemental EIR also analyzes at a project-specific level the Aggie Square Phase I project. The Aggie Square Phase I project is analyzed Volume 2 of this Supplemental EIR.

2.11 Anticipated Public Approvals

With respect to the 2020 LRDP Update, no agency other than The Regents is required to approve the plan. However, as individual projects are proposed, site- and condition-specific permits and/or approvals may be needed depending on the circumstances. The following agencies may be required to issue permits or approve certain aspects of a particular project.

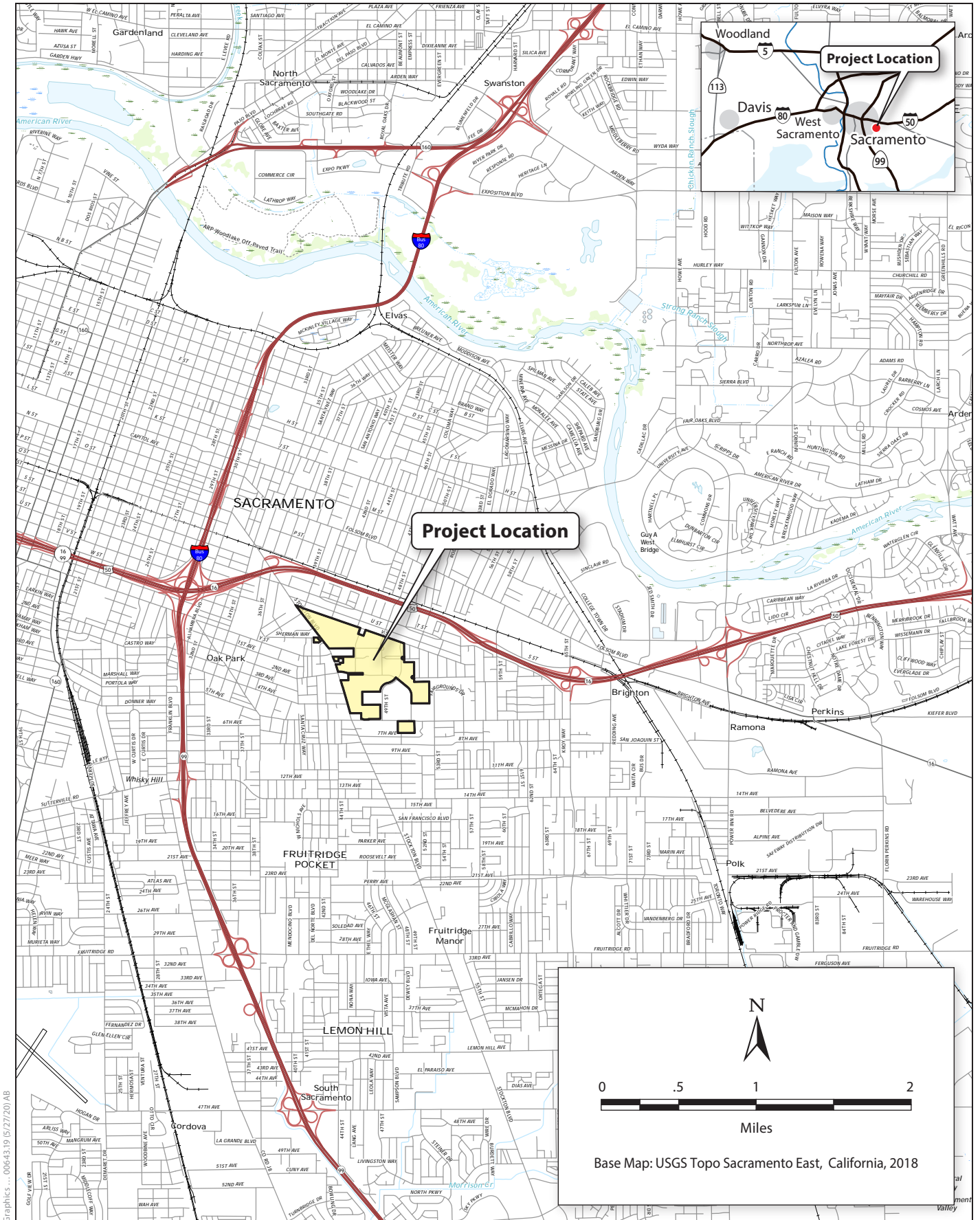
- California Department of Transportation (Caltrans) (Responsible Agency)—To provide temporary access for construction within Caltrans rights-of-way.
- Central Valley Regional Water Quality Control Board (Responsible Agency)—To provide waste discharge requirements for impacts on waters of the state and stormwater pollution prevention plans for construction/operation.
- State Water Resource Control Board (Responsible Agency)—To provide coverage under General Permit for Discharges of Storm Water Associated with Construction Activity and Statewide General Permit for Stormwater Discharges Associated with Industrial Activities.
- Sacramento Metropolitan Air Quality Management District (Responsible Agency)—To comply with stationary source permitting requirements (e.g., Authority to Construct and Permit to Operate).
- City of Sacramento—Potential approval of roadway, bike path, sidewalk improvements, and new or modified water, sewer, and stormwater utility connections.

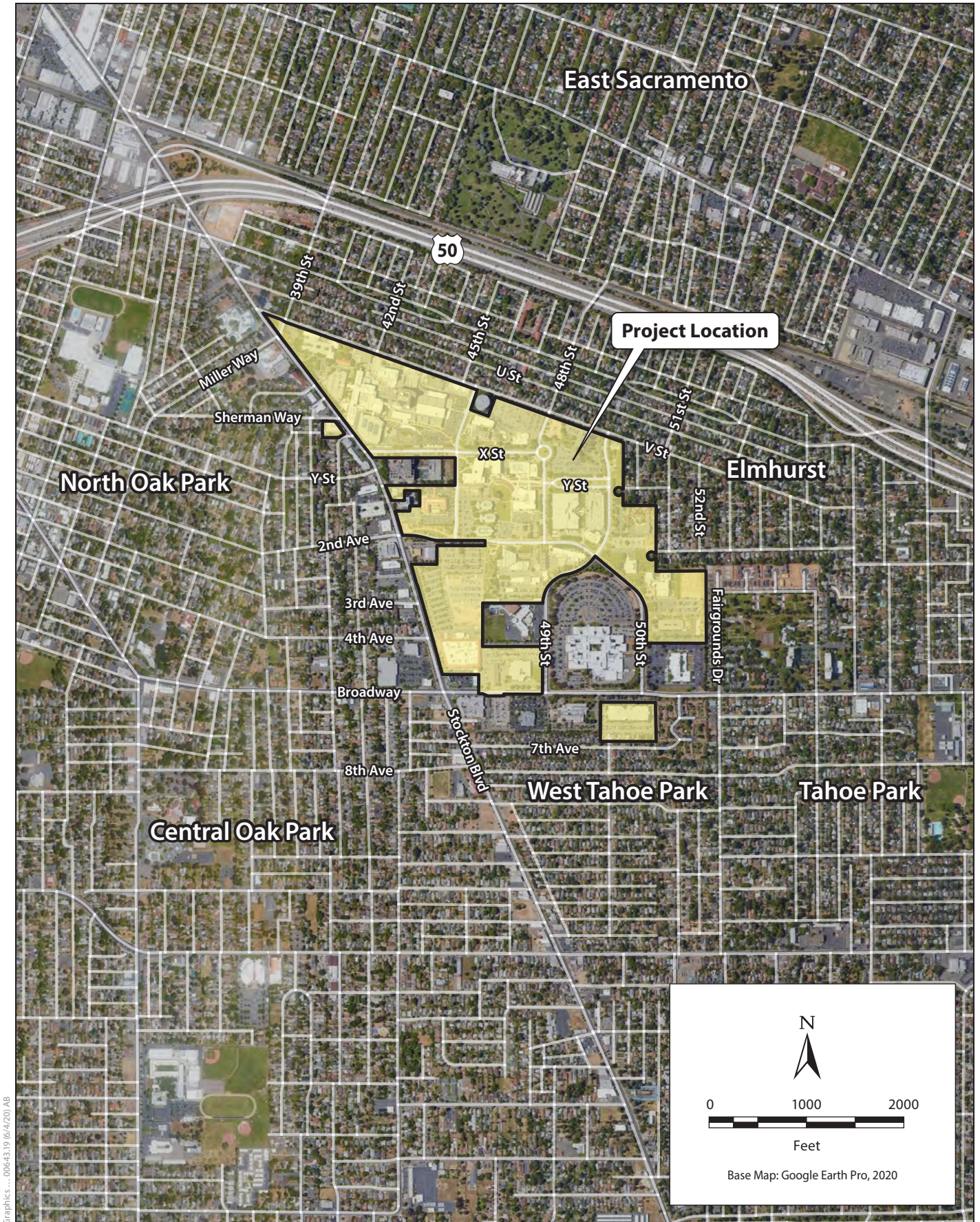
2.12 Other Campus Projects

Other campus projects for which environmental review was recently completed separate from this 2020 LRDP Update Supplemental EIR include the Eye Center Project, Rehabilitation Hospital, and Parking Structure 4 (PS4). The Eye Center project includes constructing an approximately 58,000-gsf, four-story building that would be an addition to the Ambulatory Care Center. Approximately 17,500 gsf of the Ambulatory Care Center will be renovated as part of this project. The project also includes the demolition of the physical therapy center, which includes a 5,000-square foot pool in the Ambulatory Care Center; roadway modifications, landscaping, and streetscape features along Y Street between 48th Street and 49th Street to accommodate the addition of the Eye Center; and an amendment to the 2010 LRDP land use designations. An addendum to the 2010 LRDP Final EIR was prepared, and the project was approved by The Regents in November 2019.

As stated above, the Rehabilitation Hospital includes the expansion of the existing 146-acre Sacramento Campus and construction of a new hospital facility on the 4-acre site. The project includes the demolition of the existing two-story building and construction of a new two-story, 58,623-gsf office building with 170 parking spaces and relocation of existing parking. A Class II Categorical Exemption was prepared for the project and approved by The Regents in 2020.

The PS4 project includes the construction and operation of a new parking structure at the northeast corner of 48th Street and X Street; removal of the roundabout at the X Street and 48th Street intersection and reconfiguring that intersection; a new traffic signal at the X Street and 48th Street intersection; reconfiguring of parking lot 18; utility improvements; roadway and landscaping improvements; and bicycle and pedestrian improvements. An addendum to the 2010 LRDP Final EIR was prepared for the project and approved by The Regents in 2020.





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Photo 1. View from Parking Lot 4 Looking West.



Photo 2. View from Roundabout at X Street and 48th Street Looking South East.



Photo 3. View of Administrative Support Building Looking South West.



Photo 4. View of Education Building Looking South East.



Photo 5. View from X Street and 45th Street Looking North West.



Photo 6. View from Corner of 45th Street and X Street By Lot 3 Looking South.



Photo 7. View of Cancer Center South Building Looking East.



Photo 8. View of Emergency Room Looking North.



Photo 9. View of Hospital Parking Garage Looking West.



Photo 10. View of Shriners Hospital Looking South.



Photo 11. View of Courtyard by Marriott Looking North West.



Photo 12. View of Facilities Support Services Building Looking South West.



Photo 13. View of Central Utility Plant Looking East.



Photo 14. View of Central Utility Plant Looking South.



Photo 15. View of Central Utility Plant Looking West.



Photo 16. View of Open Space Near Parking and Transportation Services Looking South.



Photo 17. View of MIND Institute Looking North East.



Photo 18. View from 2nd Avenue and Stockton Blvd Looking North.



Legend

- Project Boundary
- Hospital
- Patient Care
- Collaboration and Research
- Education Core
- Support

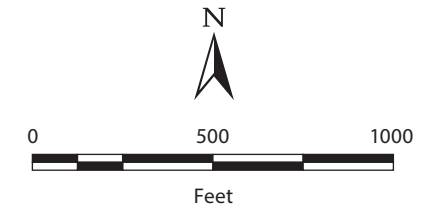


Image: Google Earth Pro, 2020

U.C. Davis Facilities

1. Main Hospital
2. Cypress Building
3. Cancer Center
4. Imaging Research Center
5. Lawrence J. Ellison Ambulatory Care Center
6. Same Day Surgery Center
7. M.I.N.D. Institute Clinic & Resource Center
8. Education Building
9. Center for Health and Technology
10. Administrative Support Building
11. Betty Irene Moore Hall
12. Medical Records Building
13. Housestaff Facility
14. Patient Support Services Building
15. Pathology Administration Teaching & History
16. Trailer 35
17. Research Building 2
18. Research Building 1
19. Research Building 3
20. Facilities Support Services Building
21. Central Plant
22. Fleet Services Facility
23. M.I.N.D. Institute
24. I.R.C. Utility Building
25. Institute for Regenerative Cures
26. Broadway Building
27. Sherman Way Building

28. Parking Structure 1
29. Parking Structure 3
30. Parking Structure 2
31. Courtyard by Marriott
32. Ronald McDonald House
33. Governor's Hall
34. Translational Science Center
35. Kiwanis Family House

Adjacent Facilities

36. Behavioral Health Center
37. Children's Behavioral Health Center
38. Glassrock Building
39. Davis I
40. Western Fairs Building
41. Ticon II
42. Oak Park Research Building
43. Ticon III
44. Hunt Building
45. ABMCO Building
46. UCDMC Bookstore
47. Davis II
48. Shriners Hospital
49. Shriners Parking
50. Language Academy of Sacramento
51. California Department of Justice
52. Employment Development Department



Photo 1. View from Sherman Way and 41st Street Looking East.



Photo 2. View from Sherman Way and Stockton Blvd Looking South.



Photo 3. View from V St and 42nd Street Looking south.



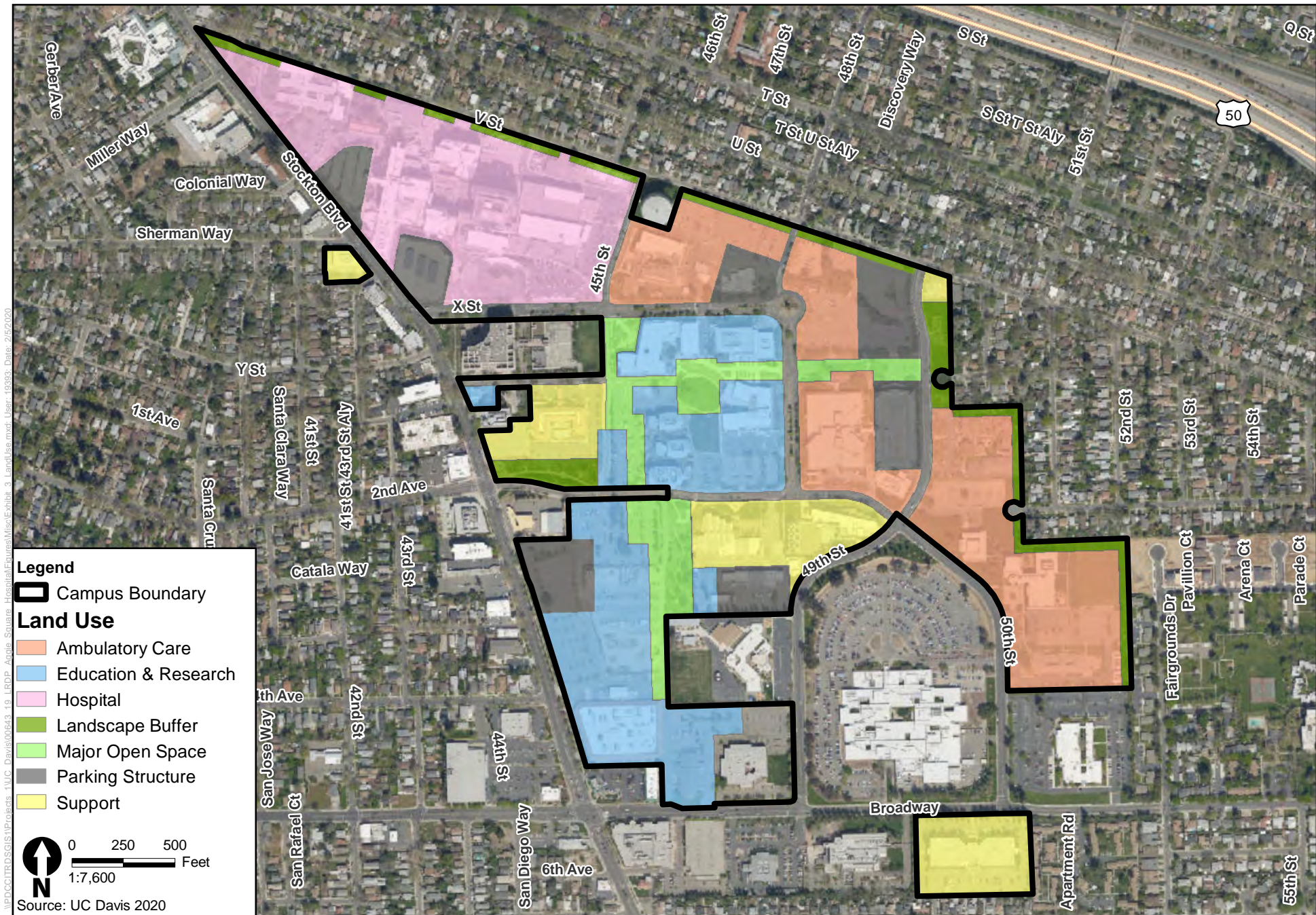
Photo 4. View from U Street and 42nd Street Looking South East.



Photo 5. View from U Street and 45th Street Looking South West.



Photo 6. View from V Street and 48th Street Looking South West.







Legend

 Project Boundary

1. Cypress Demo & New Parking Lot
2. Housestaff Demolition
3. North South Demolition
4. Replacement Hospital Tower
5. Demolition 2020
6. Sherman Way Building Renovation
7. Cancer Center Phase III 2020-2030
8. Parking Structure 5 2020-2030
9. Parking Structure 4
10. Wellness Building and Parking Structure
11. Eye Center
12. ACC Renovation
13. Ambulatory Surgery Center
14. Aggie Square Phase I
15. Aggie Square Phase II Buildings 5&6
16. FSSB Building Renovation
17. Parking Structure 6
18. Governor's Hall Renovation
19. Rehab Hospital
20. Broadway Building Seismic Renovation

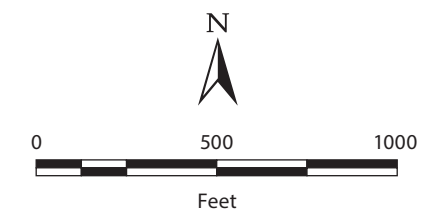


Image: Google Earth Pro, 2020

Chapter 3

Existing Environmental Setting, Impacts, and Mitigation

Chapter 3 of this volume (Volume 1) of the Supplemental EIR evaluates the potential environmental impacts associated with implementation of the proposed Sacramento Campus 2020 LRDP Update by UC Davis. As noted in Chapter 1, when certified, this Supplemental EIR, along with the 2010 LRDP EIR, will serve as the programmatic environmental document for overall expected growth and will be used for tiering purposes when implementing the 2020 LRDP Update. This chapter is divided by environmental resource category; each resource category is organized to provide an integrated discussion of the existing environmental conditions (including regulatory setting and environmental setting), potential environmental effects (including direct and indirect impacts, as needed), and measures to reduce significant effects, where feasible.

Cumulative and growth-inducing impacts are discussed in Chapters 4, *Cumulative Impacts*, and 5, *Other CEQA Sections*, respectively.

3.0 Introduction to the Analysis

As required by California Environmental Quality Act (CEQA) (CEQA Guidelines [California Code of Regulations (CCR) Section 15126.2]), this Supplemental EIR identifies and focuses on the significant direct and indirect environmental effects of the project. Short-term effects are generally those associated with construction, and long-term effects are generally those associated with operation of the project. This chapter addresses the environmental setting, environmental impacts, and mitigation measures associated with the project in relation to the following resource categories.

- Section 3.1, *Aesthetics*
- Section 3.2, *Air Quality*
- Section 3.3, *Biological Resources*
- Section 3.4, *Archaeological, Historical, and Tribal Cultural Resources*
- Section 3.5, *Energy*
- Section 3.6, *Geology, Soils, and Seismicity*
- Section 3.7, *Greenhouse Gas Emissions*
- Section 3.8, *Hazards and Hazardous Materials*
- Section 3.9, *Hydrology and Water Quality*
- Section 3.10, *Land Use*
- Section 3.11, *Noise*
- Section 3.12, *Population and Housing*
- Section 3.13, *Public Services and Utilities*
- Section 3.14, *Recreation*

- Section 3.15, *Transportation and Circulation*
- Section 3.16, *Utilities and Service Systems*

Sections 3.1 through 3.16 follow the same general format.

- **Regulatory Setting** presents the laws, regulations, plans, and policies that are relevant to each resource category. Regulations originating from the federal, state, University of California, and regional and local levels are each discussed where applicable. Please see the discussion under *University of California Autonomy* below for information regarding the University's autonomy with respect to land use policies and municipal regulations.
- **Environmental Setting** presents the existing environmental conditions on the project site (the plan area) and surrounding area as appropriate, in accordance with CEQA Guidelines (CCR Section 15125). The 2020 LRDP Update Supplemental EIR uses the year 2019 as the baseline year to reflect existing environmental conditions. The geographic extent of the study area differs among resources, depending on the locations where impacts would be expected. For example, air quality impacts are assessed for the air basin (macroscale) as well as the site vicinity (microscale), whereas aesthetic impacts are assessed for the plan area vicinity.
- **Environmental Impacts and Mitigation Measures** identifies the thresholds of significance used to determine the level of significance of the environmental impacts for each resource category, in accordance with the CEQA Guidelines (CCR Sections 15126, 15126.2, and 15143). The thresholds of significance used in this Supplemental EIR are based on the checklist presented in Appendix G of the CEQA Guidelines, best available data, and applicable regulatory standards of relevant public agencies. The thresholds may also reflect local policies adopted for the purpose of avoiding or reducing an environmental impact, particularly for impacts that may affect off-campus resources, even if UC Davis is not bound by such policies; please see the *University of California Autonomy* section below. The level of each impact is determined by comparing the effects of the project to the environmental setting baseline and the listed thresholds. Key methods and assumptions used to frame and conduct the impact analysis as well as issues or potential impacts not discussed further (such issues for which the project would have no impact) are also described.

Project impacts are organized in each subsection by brief project name, resource, and number (e.g., Impact LRDP-BIO-1, Impact LRDP-BIO-2, Impact LRDP-BIO-3, etc.). Mitigation measures are numbered according to the impact number. For example, Mitigation Measure LRDP-BIO-1 would be associated with Impact BIO-1.¹ Impact analysis in Volume 1 of this Supplemental EIR covers the 2020 LRDP Update and Volume 2 covers the Aggie Square Phase I Project. A bold-font impact statement, and a summary of each impact and its level of significance prior to mitigation and after mitigation precedes the discussion of each impact. The summary appears as follows for each impact:

¹ The Mitigation Monitoring and Reporting Plan (MMRP) from this Supplemental EIR will replace the 2010 LRDP Final EIR MMRP.

Impact LRDP-XXX-#: [Impact Title]

[Brief summary of impact]. This impact would be [impact conclusion]. Implementation of Mitigation Measure LRDP-XXX-# would reduce this impact to a **[impact conclusion]** level.

The discussion that follows the impact summary includes the substantial evidence supporting the impact significance conclusion.

After the analysis and conclusion for the 2020 LRDP Update, the conclusion disclosed in the 2010 LRDP Final EIR is also included for reference and for informational purposes, where available. In many cases, the impact conclusions are the same because the resources have remained largely the same since publication of the 2010 LRDP Final EIR.

The Supplemental EIR must describe any feasible measures that could avoid, minimize, rectify, reduce, or compensate for significant adverse impacts, and the measures are to be fully enforceable through incorporation into the project or as a condition of project approval (Public Resources Code Section 21081.6[b]). Mitigation measures are not required for effects that are found to be less than significant. Where feasible mitigation for a significant impact is available, it is described following the impact. Each identified mitigation measure is labeled numerically to correspond with the number of the impact that would be mitigated by the measure. Where sufficient feasible mitigation is not available to reduce impacts to a less-than-significant level, or where The Regents lacks the ability to ensure that the mitigation is implemented when and as needed, the impacts are identified as remaining “significant and unavoidable.”

3.0.1 Terminology Used in the Supplemental EIR

This Supplemental EIR uses the following terminology to describe environmental effects of the project.

Less-than-Significant Impact: A project impact is considered less than significant when it does not exceed the threshold of significance and, therefore, would not cause a substantial change in the environment (no mitigation required).

Less than Significant with Mitigation: A project impact is considered less than significant with mitigation when it could potentially exceed the threshold of significance, but mitigation is identified to reduce the impact to a less-than-significant level.

Significant Impact: A project impact is considered significant if it results in a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of project effects in the context of specified significance criteria. Mitigation measures and/or project alternatives are identified to reduce these effects on the environment to the extent feasible.

Significant and Unavoidable Impact: A project impact is considered significant and unavoidable if it would result in a substantial adverse change in the environment that cannot be feasibly avoided or mitigated to a less-than-significant level if the project is implemented. If a lead agency proposes to approve a project with significant unavoidable impacts, it must adopt a statement of overriding considerations to explain its actions (CEQA Guidelines, Section 15093(b)).

No Impact: A project impact is considered no impact if no change would occur to that particular resource.

Cumulative Impacts: According to CEQA, “cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines, Section 15355). CEQA requires that cumulative impacts be discussed when the “project’s incremental effect is cumulatively considerable... [or] ... provide a basis for concluding that the incremental effect is not cumulatively considerable (CEQA Guidelines, CCR Section 15130 (a)).”

Mitigation Measures: The CEQA Guidelines (CCR Section 15370) define mitigation as:

- a) avoiding the impact altogether by not taking a certain action or parts of an action;
- b) minimizing impacts by limiting the degree of magnitude of the action and its implementation;
- c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- e) compensating for the impact by replacing or providing substitute resources or environments.

3.0.2 University of California Autonomy

UC Davis is part of the University of California, a constitutionally created entity of the State of California, with “full powers of organization and government” (Cal. Const. Art. IX, Section 9). As a constitutionally created State entity, the University is not subject to municipal regulations of surrounding local governments, such as the *City of Sacramento General Plan* or land use ordinances, for uses on property owned or controlled by the University that are in furtherance of the University’s educational purposes. Although there is no formal mechanism for joint planning or the exchange of ideas, UC Davis may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the Sacramento Campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts.

The Sacramento Campus seeks to maintain an ongoing exchange of ideas and information and to pursue mutually acceptable solutions for issues that confront both the campus and its surrounding community. To foster this process, UC Davis participates in, and communicates with, City, County, and community organizations and sponsors various meetings and briefings to keep local organizations, associations, and elected representatives apprised of ongoing planning efforts and to consider community input.

3.1 Aesthetics

This section describes the regulatory and environmental setting for aesthetics in the plan area, analyzes effects on aesthetics that would result from implementation of the 2020 LRDP Update, and provides mitigation measures, if applicable, to reduce the effects of any potentially significant impacts.

In response to the Notice of Preparation (NOP) for this Supplemental EIR, commenters expressed the following concerns related to aesthetics.

- Large-scale buildings too close to neighboring residential areas and support for the use of setbacks or stepped-back architecture to reduce impacts.
- Design of structures near neighboring residential areas so they visually fit.
- Desire to keep large trees and plant large trees.
- Methods to reduce light and glare impacts from intruding into neighborhoods, including signs, lights of cars in parking garages shine onto neighboring residences, light pollution.
- Large-scale buildings that would cast shadow onto adjacent neighborhoods.

3.1.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, state, and regional and local regulations, laws, and policies relevant to aesthetics in the plan area. There are no federal programs or policies addressing visual resources that pertain to the 2020 LRDP Update.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the Sacramento Campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts.

UCDMC Campus Standards & Master Specifications Design Requirements

The *UCDMC Campus Standards & Master Specifications Design Requirements* (University of California, Davis Health System 2014) apply to all new construction (including entire new buildings as well as remodels or additions to existing buildings) on the UC Davis Sacramento Campus. The guide describes a vision for creating a physical environment that supports the University's mission, vision, and values, as well as addresses the principles of the physical design framework. The guide includes green building requirements, accessibility, sustainable materials, products and equipment, landscape design, design considerations for existing trees and planting selection, lawn areas, parking/circulation, sustainability and energy efficiency, and other guidelines.

Federal

There are no federal plans or policies addressing aesthetics that pertain to the 2020 LRDP Update.

State

California Scenic Highway Program

California's Scenic Highway Program was created by the California Legislature in 1963 and is managed by the California Department of Transportation (Caltrans). The goal of this program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to highways. A highway may be designated "scenic" depending on how much of the natural landscape travelers can see, the scenic quality of the landscape, and the extent to which development intrudes on travelers' enjoyment of the view (State of California 2014). There are no designated or eligible scenic highways near the UC Davis Sacramento Campus (California Department of Transportation 2019).

Regional and Local

As a constitutionally created State entity, the University is exempt from compliance with local land use regulations, including general plans and zoning, when using land under its control in furtherance of its educational mission. As background information, the City of Sacramento's general plan goals and policies relevant to aesthetic and visual resources are presented below.

City of Sacramento General Plan

The *Sacramento 2035 General Plan* was adopted in March 2015 (City of Sacramento 2015). The Environmental Resources and Land Use elements contains the following goals and policies that are relevant to aesthetics.

GOAL ER 7.1: Maintain and protect significant visual resources and aesthetics that define Sacramento.

Policy ER 7.1.3: Lighting. The City shall minimize obtrusive light by limiting outdoor lighting that is misdirected, excessive, or unnecessary, and requiring light for development to be directed downward to minimize spill-over onto adjacent properties and reduce vertical glare.

Policy ER 7.1.4: Reflective Glass. The City shall prohibit new development from (1) using reflective glass that exceeds 50 percent of any building surface and on the bottom three floors, (2) using mirrored glass, (3) using black glass that exceeds 25 percent of any surface of a building, (4) using metal building materials that exceed 50 percent of any street-facing surface of a primarily residential building, and (5) using exposed concrete that exceeds 50 percent of any building.

GOAL LU 2.1: Maintain a city of diverse, distinct, and well-structured neighborhoods that meet the community's needs for complete, sustainable, and high-quality living environments, from the historic downtown core to well-integrated new growth areas.

Policy LU 2.1.2: Protect Established Neighborhoods. The City shall preserve, protect, and enhance established neighborhoods by providing sensitive transitions between these neighborhoods and adjoining areas, and by requiring new development, both private and public, to respect and respond to those existing physical characteristics buildings, streetscapes, open spaces, and urban form that contribute to the overall character and livability of the neighborhood.

Environmental Setting

The overall visual character of a given area results from the unique combination of natural landscape features such as landform, water, and vegetation patterns as well as built features such as buildings, roads, and other structures. For purposes of this analysis, visual or aesthetic resources are generally defined as aesthetically pleasing natural and built landscape features that are visible to humans from public vantage points.

Project Site Visual Character and Viewshed

The Sacramento Campus is in the city and county of Sacramento. The 146-acre campus is 2.5 miles southeast of downtown Sacramento on Stockton Boulevard between V Street and Broadway in east Sacramento. The campus is situated approximately 20 to 26 feet above mean sea level and gently slopes from northwest to southeast. The campus currently includes medical facilities and support buildings, roadways, parking lots, and landscaping. Buildings that currently occupy the project site range in height from 1 story to 14 stories. In addition to surface parking lots, there are three aboveground parking structures with three and four levels. A City of Sacramento circular aboveground water tank is present on V Street in the campus area. Open spaces are vegetated with non-native grasses, mature trees, and shrubs.

The Sacramento Campus's existing built environment has a visual character that is generally typical of a hospital and medical center campus. The existing campus buildings date to as far back as 1916 and include buildings of various ages and architectural styles. The most visually prominent building is the 14-story Davis Tower, which is part of the main hospital. Many of the buildings are painted with off-white and muted brown tones and have grey or red-tiled roofs. Some buildings display an industrial look and utilitarian quality.

For purposes of this study, the project viewshed (i.e., study area) is defined as the general area from which the project site would be visible to the public. The entire campus cannot be viewed from a single offsite vantage point due to the flat topography and the presence of off-campus buildings and street trees. However, portions of the campus are visible from nearby residential neighborhoods, public roadways, and commercial buildings. Views of individual buildings or groups of buildings are available from single-family homes along V Street and throughout the Elmhurst neighborhood, and commercial buildings along Stockton Boulevard and Broadway. The Davis Tower is visible from public roadways in nearby neighborhoods as far north as the U.S. Route 50 and as far west as 39th Street and Stockton Boulevard. The Davis Tower is also visible from the Interstate 80 Business Loop (Capital City Freeway) and State Route 99.

Surrounding Land Uses

The Sacramento Campus is surrounded by low- to medium-density traditional residential neighborhoods and regional commercial uses. The Elmhurst neighborhood, which consists primarily of single-family homes, lies north of V Street and the campus. To the west is the North Oak Park neighborhood, which consists of a mix of single-family and multi-family residences. These neighborhoods are characterized as pre-World War II traditional neighborhoods. The Fairgrounds neighborhood southeast of the campus consists primarily of single-family and multi-family residential uses. Several public institutions and commercial uses are located between the southern edge of the campus and Broadway and continue south of Broadway, and west of the campus along Stockton Boulevard.

Figures 2-3 and 2-5 show photographs of the existing onsite and offsite views of the campus.

3.1.2 Environmental Impacts

This section describes the environmental impacts associated with aesthetics that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

The visual impact assessment is based in part on review of aerial and ground-level photographs of the project area. A pedestrian survey was conducted in April 2020.

Thresholds of Significance

In accordance with Appendix G of the California Environmental Quality Act (CEQA) Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- A substantial adverse effect on a scenic vista.
- Substantial damage to scenic resources, including but not limited to trees, rock outcroppings, and historic buildings along a scenic highway.
- In non-urbanized areas, substantial degradation of the existing visual character or quality of public views of the site and its surroundings. In urbanized areas, conflict with applicable zoning or other regulations governing scenic quality.
- Introduction of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

Changes Since the 2010 LRDP

The 2020 LRDP Update continues the 2010 LRDP principles to improve campus open space and landscape character and to provide attractive campus entries and edges. One of the land use designations on the proposed land use map has changed slightly from “Education and Research” in the 2010 LRDP to “Education, Research, and Housing” in the 2020 LRDP Update, and height restrictions have been revised in this land use category. The changes listed below are made in the 2020 LRDP Update.

- There is a new Major Open Space land use designation proposed, running north–south between V Street and Stockton Boulevard. This area is already characterized by landscaping and hardscape.
- The Major Open Space running north–south between X Street and 4th Avenue has been realigned in the 2020 LRDP Update.
- A new parking structure along V Street between 45th and 48th Streets is proposed in the 2020 LRDP Update in a different location on the existing parking lots than in the 2010 LRDP, closer to V Street.

- A new parking structure is proposed in the 2020 LRDP Update near the UC Davis MIND Institute and near the property line.
- The parking structure included in the 2010 LRDP east of 49th Street and north of the Language Academy of Sacramento (formerly the Marian Anderson School) is larger in the 2020 LRDP Update, and located near the property line.
- A parking structure designated in the 2010 LRDP along Stockton Boulevard between 2nd and 4th Avenue is no longer proposed in the 2020 LRDP Update; this area is designated as an Education, Research, and Housing District.
- New height restrictions are proposed under the 2020 LRDP Update. As stated in Chapter 2, *Project Description*, the 2020 LRDP Update removes the height restrictions by land use designation and proposes a campus-wide maximum height of 200 feet with setback requirements to ensure there is a buffer between the Sacramento Campus and the residential neighborhoods to the north and east of the campus.

This aesthetics impact analysis considers these changes to the land use map and policies as part of the 2020 LRDP Update.

Issues Not Evaluated Further

Analysis in the *Initial Study* prepared for the 2010 LRDP Final EIR, and circulated with an NOP for the 2010 document, found that there would be no substantial adverse impact to scenic vistas or scenic resources, and therefore these issues were not analyzed in the 2010 LRDP Final EIR. Because no changes in circumstances or elements of the 2020 LRDP Update would affect that conclusion, these issues are not evaluated further.

Impacts and Mitigation Measures

Impact LRDP-AES-1: In non-urbanized areas, degradation of the existing visual character or quality of public views of the site and its surroundings; in urbanized areas, conflict with zoning or other regulations governing scenic quality

The Sacramento Campus and surrounding area is largely developed. New buildings would be visually consistent with the rest of the varied buildings on campus, and with the surrounding land uses. Mitigation Measure LRDP-AES-1 would reduce this impact. This impact would be **less than significant with mitigation**.

The Sacramento Campus is already developed and surrounded by existing commercial and residential uses. Existing development at the campus is dense and the buildings range in architectural styles and scale. Similar to the existing buildings and those proposed in the 2010 LRDP, new buildings constructed as part of the 2020 LRDP Update would vary in architectural style and size. The new development projects would occur on the campus and adjacent to the campus perimeter.

Along the northern and eastern borders of the campus, a landscape buffer prevents new buildings from being constructed within 40 feet of the edge of campus to conform with the surrounding residential community. Additional setback requirements limit building heights adjacent to the buffer. A maximum height restriction of 40 feet applies to the area 40–100 feet from the edge of campus, and 75 feet for the area 100–180 feet from the edge of campus in these areas. Along

Stockton Boulevard, the maximum height requirement is 85 feet within 0-50 feet from the edge of campus, and 120 feet from 50-100 feet from the edge of campus conform with the mid-rise commercial corridor. Along Broadway, within 0–100 feet of the edge of campus, the maximum height requirement would be 35 feet on the north side of Broadway and 35 feet on the south side of Broadway to conform with the low-rise commercial corridor. There are also new height restrictions proposed around the Sacramento Language Academy, including a 40-foot landscape buffer within 0–40 feet of the edge of campus, and a 75-foot height restriction between 40–100 feet from the edge of campus.

New buildings in all areas would be required to comply with the building height restrictions set forth under the 2020 LRDP Update for the 200-foot height restriction for the campus, the height restrictions along the campus perimeters and surrounding the Sacramento Language Academy.

New buildings developed in the interior portions of the site would appear to offsite viewers as an incremental addition to the existing urban setting of the campus. However, the 2020 LRDP Update includes several planning principles carried forward from the 2010 LRDP that are intended to improve the visual character of the campus while adding new buildings and structures. The 2020 LRDP Update land use plan increases the total amount of open space on the campus over the 2010 LRDP, providing a large open space area in the Education, Research, and Housing District. The 2020 LRDP Update also requires providing landscape treatment along major campus roads to create an image similar to the greater Sacramento downtown streets. The new height restrictions along Stockton Boulevard and Broadway are consistent with the surrounding commercial areas.

The structures (including parking structures) proposed under the 2020 LRDP Update would comply with the height limits specified in the 2020 LRDP. Given this assumption, the visual quality of the campus would not be adversely affected by additional development under the 2020 LRDP Update.

Buildings constructed near the perimeter of the campus would change existing views of the campus for offsite viewers. Buildings constructed south of V Street would change campus views as seen by residents to the north, and expansion of existing development and new buildings in the eastern portion of the campus would change views for residents to the east. However, new buildings would be designed to comply with the height and setback requirements.

The 2020 LRDP Update includes a planning principle to “... provide attractive campus entries and edges,” which is the same principle as in the 2010 LRDP. In the 2010 LRDP, this planning principle included provisions for no above-grade building construction within 40 feet of the property line and a landscape buffer zone where the campus adjoins residential neighborhoods. In combination, this landscaped setback would create a visual and physical transition from the small-scaled residential neighborhoods. This landscape buffer is included in the 2020 LRDP Update along the north and east sides of the campus and around the Sacramento Language Academy. The overall visual character of the Sacramento Campus would largely remain consistent. The 2020 LRDP Update includes a landscape buffer, staggered building heights, and overall building height limitation of 200 feet. Mitigation Measure LRDP-AES-1 will be implemented to reduce visual impacts of new projects. This impact would be **less than significant with mitigation**.

Implementation of the 2020 LRDP Update would involve various construction projects between the years 2020–2040. Construction activities could affect the visual character and quality of the Sacramento Campus during active construction. Construction involves the presence of large construction equipment on the site (e.g., cranes, demolition debris, soil stockpiles and brush clearance piles, and exposure of cleared soil). Materials storage, construction parking and access,

and staging areas can also be unsightly. The University adheres to standard practices to reduce fugitive dust, fence and screen materials, and restore any disturbed areas. The programmatic impact of construction activity on visual character is **less than significant**.

The 2010 LRDP Final EIR concluded that impacts on scenic resources would be less than significant with mitigation. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-AES-1: Install New Landscaping

The University will install landscaping within the landscape buffer adjacent to new specific projects that are approved. Installation would occur within 1 year of the development of new projects.

Impact LRDP-AES-2: Introduction of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area

New construction under the 2020 LRDP Update would create new sources of light and glare, which could affect daytime and nighttime views. However, new buildings are subject to the design review process and Mitigation Measures LRDP-AES-2a through LRDP-AES-2d would ensure that excessive light and glare would not occur. This impact would be **less than significant with mitigation**.

Implementation of the 2020 LRDP Update would create new sources of light and glare within an already developed area. Sources of new light and glare could include expansive windows on the exterior of buildings, nighttime lighting fixtures, and way-finding and safety signage. During the day, sunlight could reflect off building windows and could create additional glare. During the nighttime, way-finding and safety signage and new development on the Sacramento Campus would be lit for nighttime operations and security reasons. These new sources could potentially affect day and nighttime views. However, given the densely developed urban setting of the campus, the addition of these potential light and glare sources would not represent a significant adverse impact. In addition, as part of the design review process for individual projects proposed under the 2020 LRDP Update, all new light and glare sources will be reviewed by staff of the Sacramento Campus Facilities Planning, Design and Construction, to ensure new construction would not result in excessive light and glare. Furthermore, as new buildings are constructed adjacent to the northern and eastern perimeter of the campus, a landscaped buffer would be installed in conjunction with building development, which would also reduce light spill from the new buildings on adjacent land uses. Mitigation Measures LRDP-AES-2a through -2d will be implemented to reduce light and glare. For all of these reasons, the impact would be **less than significant with mitigation**.

The 2010 LRDP EIR concluded that impacts on visual character resulting from implementation of the 2010 LRDP would be less than significant. Implementation of the 2020 LRDP Update would result in a more severe impact, though the impact would be less than significant with mitigation.

Mitigation Measure LRDP-AES-2a: Apply Design Measures to Building Exteriors

Design for specific projects will provide for the use of textured, nonreflective exterior surfaces and nonreflective glass.

Mitigation Measure LRDP-AES-2b: Utilize Directional Lighting Methods

Except as provided in Mitigation Measure LRDP AES-4c, all new outdoor lighting will use directional lighting methods with shielded and cutoff light fixtures to minimize glare and upward-directed lighting.

Mitigation Measure LRDP-AES-2c: Review Lighting, Landscape, and Architectural Features Prior to Installation

Noncutoff, unshielded lighting fixtures used to enhance nighttime views of walking paths, specific landscape features, or specific architectural features will be reviewed by Sacramento Campus Facilities Planning, Design, and Construction staff prior to installation to ensure that the minimum amount of required lighting is proposed to achieve the desired nighttime emphasis, and the proposed illumination creates no adverse effect on nighttime views.

Mitigation Measure LRDP-AES-2d: Implement Updated Lighting Design

The University will implement the use of the specific lighting design and equipment designed to reduce light spill and glare when older lighting fixtures and designs are replaced over time.

3.2 Air Quality

“Air quality” describes the amount of air pollution to which the public is exposed. Air quality is an important consideration for the 2020 LRDP Update because of current regional air quality conditions, which exceed certain federal and state ambient air quality standards. The air quality study area encompasses the areas directly and indirectly affected by implementation of the 2020 LRDP Update. Two geographic scales define the study area—the “local” study area is the UC Davis Sacramento Campus plus areas within 1,000 feet of the plan area (industry standard screening distance for localized impacts), and the “regional” study area is the affected air basin. Both study areas are within the Sacramento Valley Air Basin (SVAB).

This section describes the regulatory and environmental setting for air quality in the plan area, analyzes effects on air quality that would result from implementation of the 2020 LRDP Update, and provides mitigation measures to reduce the effects of any significant impacts, if applicable. Appendix D, *Air Quality and Greenhouse Gas Modeling Inputs and Supporting Data*, presents supporting air quality calculations for the impact analysis, as referenced further below. Appendix E, *Health Risk Assessment Supporting Data*, provides additional details on the human health risk assessment (HRA).

In response to the Notice of Preparation for this Supplemental EIR, commenters expressed the following concerns related to air quality:

- Sacramento Metropolitan Air Quality Management District (SMAQMD) guidance on construction and operational analysis.
- General concerns related to air quality for nearby residents, including from projected VMT.

3.2.1 Existing Conditions

Regulatory Setting

Air quality in the plan area is regulated by the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and SMAQMD. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation and maintain or improve air quality. This section summarizes key federal, state, and regional and local regulations, laws, and policies relevant to air quality in the plan area.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, UC Davis, a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by UC Davis that are in furtherance of the University’s educational purposes. However, UC Davis may consider, for coordination purposes, 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. However, the University seeks to develop its property in a manner that minimizes potential land use conflicts with local jurisdictions to the extent feasible. The Regents of the University adopted the *University of California Policy on Sustainable Practices* (UC Sustainable Practices Policy) in 2006. The policy goals encompass nine areas of sustainable practices: green building design, clean energy, sustainable transportation, sustainable building

operations for campuses, zero waste, sustainable procurement, sustainable foodservices, sustainable water systems, and sustainability at UC Health (University of California 2019). The UC Sustainable Practices Policy, including examples of policies, is further described in Chapter 3.7, *Greenhouse Gas Emissions*.

Federal

Clean Air Act and National Ambient Air Quality Standards

The federal Clean Air Act (CAA) and its subsequent amendments form the basis for the nation's air pollution control effort. The EPA is responsible for implementing most aspects of the CAA and has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants—ozone, particulate matter (PM₁₀ and PM_{2.5}), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead. The NAAQS identify levels of air quality that are considered the maximum safe levels of ambient (background) air pollutants, within an adequate margin of safety, to protect public health and welfare. Table 3.2-1 shows the NAAQS currently in effect for each criteria pollutant, as well as the California ambient air quality standards (CAAQS) (discussed below under *State*).

U.S. Environmental Protection Agency Non-Road Diesel Rule

EPA has established a series of increasingly strict emission standards for new off-road diesel equipment, on-road diesel trucks, and locomotives. New equipment used for implementation of the 2020 LRDP Update, including heavy-duty trucks and off-road construction equipment, are required to comply with the emission standards.

National Corporate Average Fuel Economy Standards

The Corporate Average Fuel Economy Standards (CAFÉ) were first enacted in 1975 to improve the average fuel economy of cars and light duty trucks. On August 2, 2018, the National Highway Traffic Safety Administrative (NHTSA) and EPA proposed to amend the fuel efficiency standards for passenger cars and light trucks and establish new standards covering model years 2021 through 2026 by maintaining the current model year 2020 standards through 2026 (Safer Affordable Fuel-Efficient [SAFE] Vehicles Rule). On September 19, 2019, EPA and NHTSA issued a final action on the One National Program Rule, which is consider Part One of the SAFE Vehicles Rule and a precursor to the proposed fuel efficiency standards. The One National Program Rule enables EPA/NHTSA to provide nationwide uniform fuel economy and GHG vehicle standards, specifically by (1) clarifying that federal law preempts state and local tailpipe GHG standards, (2) affirming NHTSA's statutory authority to set nationally applicable fuel economy standards, and (3) withdrawing California's CAA preemption waiver to set state-specific standards.

EPA and NHTSA published their decisions to withdraw California's waiver and finalize regulatory text related to the preemption on September 27, 2019 (84 *Federal Register* [Fed. Reg.] 51310). California, 22 other states, the District of Columbia, and two cities filed suit against Part One of the SAFE Vehicles Rule on September 20, 2019 (*California et al. v. United States Department of Transportation et al.*, 1:19-cv-02826, U.S. District Court for the District of Columbia). On October 28, 2019, the Union of Concerned Scientists, Environmental Defense Fund (EDF), and other groups filed a protective petition for review after the federal government sought to transfer the suit to the D.C. Circuit (*Union of Concerned Scientists v. National Highway Traffic Safety Administration*). Opening briefs for the petition are currently scheduled to be completed on November 23, 2020. The lawsuit filed by California and others is stayed pending resolution of the petition.

EPA and NHTSA published final rules to amend and establish national CO₂ and fuel economy standards on April 30, 2020 (Part Two of the SAFE Vehicles Rule) (85 Fed. Reg. 24174). The revised rule changes the national fuel economy standards for light duty vehicles from 50.4 mpg to 40.5 mpg in future years. California, 22 other states, the District of Columbia filed a petition for review of the final rule on May 27, 2020. The fate of the SAFE Vehicles Rule remains uncertain in the face of pending legal deliberations.

Table 3.2-1. Current Federal and State Ambient Air Quality Standards

Criteria Pollutant	Average Time	California Standards	National Standards ^a	
			Primary	Secondary
Ozone	1-hour	0.09 ppm	None ^b	None ^b
	8-hour	0.070 ppm	0.070 ppm	0.070 ppm
Particulate Matter (PM ₁₀)	24-hour	50 µg/m ³	150 µg/m ³	150 µg/m ³
	Annual mean	20 µg/m ³	None	None
Fine Particulate Matter (PM _{2.5})	24-hour	None	35 µg/m ³	35 µg/m ³
	Annual mean	12 µg/m ³	12.0 µg/m ³	15 µg/m ³
Carbon Monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen Dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur Dioxide ^c	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.014 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day Average	1.5 µg/m ³	None	None
	Calendar quarter	None	1.5 µg/m ³	1.5 µg/m ³
	3-month average	None	0.15 µg/m ³	0.15 µg/m ³
Sulfates	24-hour	25 µg/m ³	None	None
Visibility-reducing Particles	8-hour	– ^d	None	None
Hydrogen Sulfide	1-hour	0.03 ppm	None	None
Vinyl Chloride	24-hour	0.01 ppm	None	None

Source: California Air Resources Board 2016.

ppm= parts per million; µg/m³ = micrograms per cubic meter; NAAQS = National Ambient Air Quality Standard; SO₂ = sulfur dioxide; CAAQS = California Ambient Air Quality Standard.

^a National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

^b The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was employed for such a long period and is a benchmark for state implementation plans.

^c The annual and 24-hour NAAQS for SO₂ only apply for 1 year after designation of the new 1-hour standard to those areas that were previously in nonattainment for 24-hour and annual NAAQS.

^d CAAQS for visibility-reducing particles is defined by an extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70 percent.

State

Like the federal CAA at the national level, the California Clean Air Act (CCAA) established a statewide air pollution control program. CARB is responsible for enforcing the CCAA and has set CAAQS for criteria pollutants. The current CAAQS are shown in Table 3.2-1 above. CARB also regulates toxic air contaminants (TACs), as discussed further below.

California Clean Air Act and California Ambient Air Quality Standards

In 1988, the state legislature adopted the CCAA, which established a statewide air pollution control program. The CCAA requires all air districts in the state to endeavor to meet the CAAQS by the earliest practical date. Unlike the CAA, the CCAA does not set precise attainment deadlines. Instead, the CCAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. CAAQS are generally more stringent than NAAQS and incorporate additional standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride.

CARB and local air districts bear responsibility for meeting the CAAQS, which are to be achieved through district-level air quality management plans (AQMP) incorporated into the State Implementation Plans (SIP). In California, EPA has delegated authority to prepare SIPs to CARB, which, in turn, has delegated that authority to individual air districts. CARB traditionally has established state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA substantially adds to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The CCAA also emphasizes the control of “indirect and area-wide sources” of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures.

CARB Advanced Clean Truck Regulation

CARB adopted the Advanced Clean Truck Regulation in June 2020 to accelerate a large-scale transition of zero-emission medium-and-heavy-duty vehicles. The regulation requires the sale of zero-emission medium-and-heavy-duty vehicles as an increasing percentage of total annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55 percent of Class 2b – 3 truck sales, 75 percent of Class 4 – 8 straight truck sales, and 40 percent of truck tractor sales. By 2045, every new medium- and heavy-duty truck sold in California will be zero-emission. Large employers including retailers, manufacturers, brokers, and others are required to report information about shipments and shuttle services to better ensure that fleets purchase available zero-emission trucks.

CARB Truck and Bus Regulation

Originally adopted in 2005, the on-road truck and bus regulation requires heavy trucks to be retrofitted with particulate matter filters. The regulation applies to privately and federally owned diesel-fueled trucks with a gross vehicle weight rating greater than 14,000 pounds. Compliance with the regulation can be reached through one of two paths: (1) vehicle retrofits according to engine year, or (2) phase-in schedule. Compliance paths ensure that by January 2023, nearly all trucks and buses will have 2010 model year engines or newer.

CARB Tailpipe Emission Standards

Like the EPA at the federal level, CARB has established a series of increasingly strict emission standards for new off-road diesel equipment, on-road diesel trucks, and harbor craft operating in California. New equipment used to construct building and facilities as part of the implementation of the 2020 LRDP Update would be required to comply with the standards.

Carl Moyer Program

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) is a voluntary program that offers grants to owners of heavy-duty vehicles and equipment. The program is a partnership between CARB and the local air districts throughout the state to reduce air pollution emissions from heavy-duty engines. Locally, the air districts administer the Carl Moyer Program.

Toxic Air Containment Identification and Control Act

California regulates TACs primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). In the early 1980s, the CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (AB 1807) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health threat, and facility plans to reduce these hazards.

In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (California Air Resources Board 2000). The goal of the plan was to reduce diesel particulate matter (DPM) emissions and the associated health threat by 75 percent in 2010 and by 85 percent by 2020. The plan identifies 14 measures that target new and existing on-road vehicles (e.g., heavy-duty trucks and buses), off-road equipment (e.g., graders, tractors, forklifts, sweepers, and boats), portable equipment (e.g., pumps), and stationary engines (e.g., stand-by power generators). The Tanner Act sets forth a formal procedure for the CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before the CARB designates a substance as a TAC. To date, the CARB has identified 21 TACs, and has also adopted the EPA's list of hazardous air pollutants (HAPs) as TACs.

The Hot Spots Act requires that existing facilities that emit toxic substances above specified levels complete the following actions.

- Prepare a toxic emission inventory.
- Prepare a risk assessment if emissions are significant.
- Notify the public of significant risk levels.
- Prepare and implement risk reduction measures.

CARB has adopted several regulations that will reduce diesel emissions from in-use vehicles and engines throughout California. For example, CARB adopted an idling regulation for on-road diesel-fueled commercial vehicles in July 2004 and updated in October 2005. The regulation applies to public and privately owned trucks with a gross vehicle weight rating (GVWR) greater than 10,000 pounds. Vehicles subject to the regulation are prohibited from idling for more than 5 minutes in any

one location. CARB also adopted a regulation for diesel-powered construction and mining vehicles operating. Fleet owners are subject to retrofit or accelerated replacement/repower requirements for which CARB must obtain authorization from EPA prior to enforcement. The regulation also imposes a 5-minute idling limitation on owners, operators, and renters or lessees of off-road diesel vehicles. In some cases, the particulate matter reduction strategies also reduce smog-forming emissions such as nitrogen oxides (NO_x). As an ongoing process, the CARB reviews air contaminants and identifies those that are classified as TACs. CARB also continues to establish new programs and regulations for the control of TACs, including DPM, as appropriate.

Regional and Local

Sacramento Air Quality Management District

SMAQMD has local air quality jurisdiction over projects in the SVAB. SMAQMD is responsible for overseeing stationary-source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, and reviewing air quality-related sections of environmental documents required by CEQA. SMAQMD is also responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws (e.g., CAA and CCAA).

SMAQMD is required to prepare air quality attainment plans that outline specific strategies and programs for ensuring that NAAQS and CAAQS are met. SMAQMD has prepared several air quality plans, including the *2017 Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Sacramento Regional OAP), *PM_{2.5} Maintenance Plan and Redesignation Request*, and *PM₁₀ Implementation/Maintenance Plan and Redesignation Request for Sacramento County*. These plans respond to federal and state air quality planning requirements and outline strategies for attaining the ambient air quality standards for ozone and particulate matter.

SMAQMD developed advisory emission thresholds to assist CEQA lead agencies in determining the level of significance of a project's emissions, which are outlined in its *Guide to Air Quality Assessment in Sacramento County* (SMAQMD's CEQA Guide) (Sacramento Metropolitan Air Quality Management District 2020a). The air district also has established rules and regulations, of which the following may apply to the alternatives. This list of rules may not be all encompassing as additional SMAQMD rules may apply to the alternatives as specific components are identified.

- **Rule 201 (General Permit Requirements).** This rule requires that any project constructing, altering, replacing, or operating any stationary source operation, the use of which emits, may emit, or may reduce emissions, to obtain an Authority to Construct (ATC) and a Permit to Operate (PTO).
- **Rule 202 (New Source Review).** This rule provides mechanisms by which an ATC can be granted without interfering with the basin's attainment with ambient air quality standards. These mechanisms offer methods to generate no net increases in emissions of nonattainment pollutants over specific thresholds as detailed in the rule.
- **Rule 207 (Title V Federal Operating Permit Program).** This rule establishes an operating permitting system consistent with the requirements of 42 United States Code Section 7661 *et seq.* (Title V) and pursuant to 40 Code of Federal Regulations (CFR) Part 70.
- **Rule 401 (Ringelmann Chart/Opacity).** This rule limits the discharge of air contaminants (i.e., fugitive dust, diesel exhaust) into the atmosphere through visible emissions and opacity.

- **Rule 402 (Nuisance).** This rule prevents criteria pollutants from creating a nuisance to surrounding properties.
- **Rule 403 (Fugitive Dust).** This rule controls fugitive dust emissions through implementation of best management practices (BMPs).
- **Rule 404 (Particulate Matter).** This rule restricts emissions of particulate matter greater than 0.23 grams per cubic meter.
- **Rule 405 (Dust and Condensed Fumes).** This rule limits the discharge of dust and condensed fumes into the atmosphere by establishing emission rates based on process weight.
- **Rule 406 (Specific Contaminants).** This rule limits the emission of sulfur compounds and combustion contaminants through establishment of emission concentrations.
- **Rule 411 (NO_x from Boilers, Process Heaters, and Steam Generators).** This rule limits the emission of NO_x and CO from boilers, steam generators, and process heaters.
- **Rule 412 (Stationary Internal Combustion Engines).** This rule controls emissions of NO_x, CO, and non-methane hydrocarbons from stationary internal combustion engines greater than 50 brake horsepower.
- **Rule 413 (Stationary Gas Turbines).** This rule limits emissions of nitrogen oxides to the atmosphere from the operation of stationary gas turbines.
- **Rule 414 (Water Heaters, Boilers and Process Heaters Rated Less than 1,000,000 British Thermal Units per Hour).** This rule limits emissions of NO_x from natural gas-fired water heaters, boilers, and process heaters.
- **Rule 420 (Sulfur Content of Fuels).** This rule limits the emission of compounds of sulfur from combustion of fuels.
- **Rule 442 (Architectural Coatings).** This rule limits the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within SMAQMD.
- **Rule 453 (Cutback and Emulsified Asphalt Paving).** This rule limits the application of cutback and emulsified asphalt.
- **Rule 902 (Asbestos).** This rule implements EPA's National Emission Standard for Hazardous Air Pollutants (NESHAP) for Asbestos (40 CFR Section 61.140 *et seq.*) and to limit the emission of asbestos to the atmosphere. The NESHAP requires that all buildings be properly inspected for the presence of asbestos prior to demolition and renovation and that the SMAQMD be notified before any demolition or renovation activity occurs.

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the Sacramento region that provides transportation planning and funding for the region. SACOG is responsible for providing current population, employment, travel, and congestion projections for regional air quality planning efforts. SACOG's *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) for the Sacramento region provides a planning framework that pro-actively links land use, air quality, and transportation needs. The 2020 MTP/SCS was adopted by SACOG on November 18, 2019 (Sacramento Area Council of Governments 2019).

Environmental Setting

This section discusses the environmental setting relevant to air quality. It summarizes how air pollution moves through the air, water, and soil within the SVAB and how it is chemically changed in the presence of other chemicals and particles. This section also summarizes local climate conditions, existing air quality conditions, and sensitive receptors that may be affected by the emissions generated by the 2020 LRDP Update.

Climate, Meteorology, and Topography

Ambient air quality is affected by climatological conditions, topography, and the types and amounts of pollutants emitted. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants within and throughout various air basins. The plan area is in the SVAB. The SVAB is bounded on the north by the Cascade Range, on the south by the San Joaquin Valley Air Basin (SJVAB), on the east by the Sierra Nevada, and on the west by the Coast Ranges. The SVAB contains all of Tehama, Glenn, Butte, Colusa, Yolo, Sutter, Yuba, Sacramento, and Shasta Counties, as well as portions of Solano and Placer Counties (17 California Code of Regulations [Cal. Code Regs.] §60106).

The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During winter, the north Pacific storm track intermittently dominates Sacramento Valley weather, and fair-weather alternates with periods of extensive clouds and precipitation. Periods of dense and persistent low-level fog, which is most prevalent between storms, are also characteristic of winter weather in the valley. The frequency and persistence of heavy fog in the valley diminish with the approach of spring. The average yearly temperature range for the Sacramento Valley is 20 degrees Fahrenheit (°F) to 115°F, with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

In general, the prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north. The mountains surrounding the SVAB create a barrier to airflow that can trap air pollutants under certain meteorological conditions. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells collect over the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduce the influx of outside air and allow air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with temperature inversions (warm air over cool air), which trap pollutants near the ground. Figure 3.2-1 presents the current prevailing winds for the closest monitoring station, which is located at the Sacramento Executive Airport, approximately 2.5 miles west of the plan area.

The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds with the Delta sea breeze arriving in the afternoon out of the southwest. Usually the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, however, a phenomenon called the Schultz eddy prevents this from occurring. Instead of allowing the prevailing wind patterns to move north carrying the pollutants out, the Schultz eddy causes the wind pattern to circle back to the south. Essentially, this phenomenon causes the air pollutants to be blown south toward the Sacramento Valley and Yolo County. This phenomenon has the effect of exacerbating the pollution

levels in the area and increases the likelihood of violating federal or state standards. The eddy normally dissipates around noon when the Delta sea breeze arrives.

Criteria Pollutants

Sources and Health Effects

Criteria air pollutants are a group of six air pollutants for which the EPA and CARB have set ambient air quality standards (see Table 3.2-1). Ozone is considered a regional pollutant because its precursors affect air quality on a regional scale. CO, NO₂, SO₂, and lead are considered local pollutants that tend to accumulate in the air locally. PM is both a regional and local pollutant.

Concentrations of criteria pollutants are commonly used indicators of ambient air quality for which acceptable levels of exposure can be determined. The ambient air quality standards for these pollutants are set with an adequate margin of safety for public health and the environment (CAA Section 109). Epidemiological, controlled human exposure, and toxicology studies evaluate potential health and environmental effects of criteria pollutants and form the scientific basis for new and revised ambient air quality standards.

Table 3.2-2 provides a brief description of sources and health effects of the six criteria pollutants. The primary criteria pollutants of concern generated by implementation of the 2020 LRDP Update are ozone precursors (NO_x and ROG) and particulate matter.¹ Additional narrative on sources and health effects of these pollutants follows the table.

Table 3.2-2. Sources and Potential Health and Environmental Effects of Criteria Pollutants

Pollutant	Primary Sources	Potential Effects
Ozone	Formed by a chemical reaction between ROG and NO _x in the presence of sunlight. Primary sources of ROG and NO _x are vehicle exhaust, industrial combustion, gasoline storage and transport, solvents, paints, and landfills.	Inflammation of the mucous membranes and lung airways; wheezing; coughing and pain when inhaling deeply; decreased lung capacity; aggravation of lung and heart problems. Reduced crop yield and damage to plants, rubber, some textiles, and dyes.
Particulate matter	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, and automobiles.	Irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Carbon monoxide	A component of motor vehicle exhaust that is formed when carbon in fuel is not burned completely.	Reduced ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impaired vision and dizziness that can lead to unconsciousness or death.

¹ Minor amounts of CO, NO₂, and SO₂ may be generated by construction and certain operational sources. But these emissions are of less concern because neither construction nor operational activities associated with land use development projects are likely to generate substantial quantities of these criteria pollutants (Sacramento Metropolitan Air Quality Management District 2020a). Lead emissions are typically associated with industrial sources, which are not included as part of the 2020 LRDP Update. Sacramento County also currently attains the CAAQS and NAAQS for CO, NO₂, SO₂, and lead.

Pollutant	Primary Sources	Potential Effects
Nitrogen dioxide	Motor vehicles, electric utilities, and other sources that burn fuel.	Aggravation of lung and heart problems. Precursor to ozone and acid rain. Contributes to global warming and nutrient overloading, which deteriorates water quality. Brown discoloration of the atmosphere.
Sulfur dioxide	Petroleum refineries, cement manufacturing, metal processing facilities, locomotives, large ships, and fuel combustion in diesel engines.	Aggravation of lung and heart problems. Converts to sulfuric acid, which can damage marble, iron, and steel. Damage to crops and natural vegetation. Impaired visibility.
Lead	Metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia; damage to the kidneys, liver, brain, reproductive, nerves, and other organs; and neurological problems, including learning deficits and lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: California Air Pollution Control Officers Association n.d.

ROG = reactive organic gases; NO_x = nitrogen oxides; IQ = intelligence quotient.

Ozone

Ozone, or smog, is photochemical oxidant that is formed when ROGs and NO_x (both by-products of the internal combustion engine) react with sunlight. ROGs are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROGs are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The two major forms of NO_x are nitric oxide (NO) and NO₂. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO₂ is a reddish-brown irritating gas formed by the combination of NO and oxygen. In addition to serving as an integral participant in ozone formation, NO_x also directly acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens due to impairments to the immune system.

Ozone poses a higher risk to those who already suffer from respiratory diseases (e.g., asthma), children, older adults, and people who are active outdoors. Exposure to ozone at certain concentrations can make breathing more difficult, cause shortness of breath and coughing, inflame and damage the airways, aggregate lung diseases, increase the frequency of asthma attacks, and cause chronic obstructive pulmonary disease. Studies show associations between short-term ozone exposure and nonaccidental mortality, including deaths from respiratory issues. Studies also suggest long-term exposure to ozone may increase the risk of respiratory-related deaths (U.S. Environmental Protection Agency 2019). The concentration of ozone at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e., breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone and a 50 percent decrement in forced airway volume in the most responsive individual. Although the results vary, evidence suggest that sensitive populations (e.g., asthmatics) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (U.S. Environmental Protection Agency 2016).

In addition to human health effect, ozone has been tied to crop damage, typically in the form of stunted growth, leaf discoloration, cell damage, and premature death. Ozone can also act as a corrosive and oxidant, resulting in property damage such as the degradation of rubber products and other materials.

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter less than 10 microns in diameter, about 1/7th the thickness of a human hair, is referred to as PM10. Particulate matter that is 2.5 microns or less in diameter, roughly 1/28th the diameter of a human hair, is referred to as PM2.5. Major sources of PM10 include motor vehicles; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. PM2.5 results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. Particulate matter also forms when gases emitted from industries and motor vehicles, such as SO₂, NO_x, and ROG, undergo chemical reactions in the atmosphere.

Particulate pollution can be transported over long distances and may adversely affect the human respiratory system, especially for people who are naturally sensitive or susceptible to breathing problems. Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms. In 2008, CARB estimated that annual PM2.5 emissions for the entire Sacramento Metropolitan Area² cause 90 premature deaths, 20 hospital admissions, 1,200 asthma and lower respiratory symptom cases, 110 acute bronchitis cases, 7,900 lost workdays, and 42,000 minor restricted activity days (Sacramento Metropolitan Air Quality Management District et al. 2013:1–2). Depending on its composition, both PM10 and PM2.5 can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain (U.S. Environmental Protection Agency 2020a).

Ambient Concentrations

Ambient air quality refers to the concentration of pollutants in the air. CARB collects ambient air quality data through a network of air monitoring stations throughout the state. Table 3.2-3 summarizes data for criteria pollutant levels from the T Street Station monitoring station for the last 3 years for which complete data was available (2016 through 2018). The T Street Station is the nearest monitoring station to the plan area and is approximately 2.6 miles northwest of the main hospital.

Table 3.2-3 shows the T Street Station monitoring station experienced violations of the state and federal ozone, PM10, and PM2.5 standards. The state standard for CO and NO₂ were not exceeded. Existing violations of the ozone and particulate matter ambient air quality standards indicate that certain individuals exposed to this pollutant may experience certain health effects, including increased incidence of cardiovascular and respiratory ailments.

² Sacramento Metropolitan Area includes Sacramento and Yolo counties and portions of Placer, Solano, and El Dorado counties.

Table 3.2-3. Ambient Criteria Air Pollutant Monitoring Data (2016–2018) from the T Street Station

Pollutant Standards	2016	2017	2018
Ozone (O₃)			
Maximum 1-hour concentration (ppm)	0.094	0.107	0.097
Maximum 8-hour concentration (ppm)	0.074	0.077	0.084
<i>Number of days standard exceeded^a</i>			
CAAQS 1-hour standard (> 0.09 ppm)	0	1	1
NAAQS/CAAQS 8-hour standard (> 0.070 ppm)	3	3	1
Carbon Monoxide (CO) (data from the Bercut Drive Station)			
Maximum 8-hour concentration (ppm)	1.3	1.2	3.0
Maximum 1-hour concentration (ppm)	1.6	1.8	3.2
<i>Number of days standard exceeded^a</i>			
NAAQS/CAAQS 8-hour standard (≥ 9 ppm/ ≥ 9.0 ppm)	0	0	0
NAAQS/CAAQS 1-hour standard (≥ 35 ppm/ ≥ 20 ppm)	0	0	0
Nitrogen Dioxide (NO₂)			
State maximum 1-hour concentration (ppb)	55	58	66
State second-highest 1-hour concentration (ppb)	53	57	63
Annual average concentration (ppb)	*	9	9
<i>Number of days standard exceeded</i>			
CAAQS 1-hour standard (0.18 ppm)	0	0	0
Particulate Matter (PM₁₀)			
National ^b maximum 24-hour concentration ($\mu\text{g}/\text{m}^3$)	50.3	149.9	292.6
National ^b second-highest 24-hour concentration ($\mu\text{g}/\text{m}^3$)	46.4	88.4	252.7
State ^c maximum 24-hour concentration ($\mu\text{g}/\text{m}^3$)	51.4	150.3	309.5
State ^c second-highest 24-hour concentration ($\mu\text{g}/\text{m}^3$)	49.2	89.8	267.2
National annual average concentration ($\mu\text{g}/\text{m}^3$)	19.1	23.8	29.2
State annual average concentration ($\mu\text{g}/\text{m}^3$) ^d	19.5	*	29.7
<i>Number of days standard exceeded^e</i>			
NAAQS 24-hour standard (>150 $\mu\text{g}/\text{m}^3$)	0	0	6
CAAQS 24-hour standard (>50 $\mu\text{g}/\text{m}^3$)	1	21	22
Particulate Matter (PM_{2.5})			
National ^b maximum 24-hour concentration ($\mu\text{g}/\text{m}^3$)	24.4	44.5	149.9
National ^b second-highest 24-hour concentration ($\mu\text{g}/\text{m}^3$)	24.2	35.9	108.8
State ^c maximum 24-hour concentration ($\mu\text{g}/\text{m}^3$)	39.8	46.0	263.3
State ^c second-highest 24-hour concentration ($\mu\text{g}/\text{m}^3$)	32.5	46.0	225.1
National annual average concentration ($\mu\text{g}/\text{m}^3$)	7.6	9.1	*
State annual average concentration ($\mu\text{g}/\text{m}^3$) ^d	7.7	9.2	12.8
<i>Number of days standard exceeded^e</i>			
NAAQS 24-hour standard (> 35 $\mu\text{g}/\text{m}^3$)	0	6	3

Pollutant Standards	2016	2017	2018
Sulfur Dioxide (SO₂)			
No data			

Sources: California Air Resources Board 2020a; U.S. Environmental Protection Agency 2020b.

ppm = parts per million; NAAQS = National Ambient Air Quality Standards; CAAQS = California Ambient Air Quality Standards; µg/m³ = micrograms per cubic meter; * = data not available.

^a An exceedance is not necessarily a violation.

^b National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

^c State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, state statistics are based on California-approved samplers.

^d State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

^e Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored. Values have been rounded.

Regional Attainment Status

Local monitoring data are used to designate areas as nonattainment, maintenance, attainment, or unclassified for the ambient air quality standards.

- **Nonattainment.** Assigned to areas where monitored pollutant concentrations consistently violate the standard in question.
- **Maintenance.** Assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.
- **Attainment.** Assigned to areas where pollutant concentrations meet the standard in question over a designated period.
- **Unclassified.** Assigned to areas where data are insufficient to determine whether a pollutant is violating the standard in question.

Table 3.2-4 summarizes the current attainment status of Sacramento County with respect to the CAAQS and NAAQS.

Table 3.2-4. Federal and State Ambient Air Quality Attainment Status for Sacramento County

Criteria Pollutant	Federal Designation	State Designation
O ₃ (8-hour)	Severe 15 Nonattainment ^a	Nonattainment
CO	Attainment	Attainment
PM ₁₀	Moderate Maintenance	Nonattainment
PM _{2.5}	Moderate Nonattainment	Attainment
NO ₂	Attainment	Attainment
SO ₂	Attainment	Attainment
Lead	Attainment	Attainment

Sources: California Air Resources Board 2020b; U.S. Environmental Protection Agency 2020c.

CO = carbon monoxide; PM₁₀ = particulate matter less than 10 microns in diameter; PM_{2.5} = particulate matter less than 2.5 microns in diameter; NO₂ = nitrogen dioxide; SO₂ = sulfur dioxide.

^a Areas classified as severe-15 must attain the NAAQS within 15 years of the effective date of the nonattainment designation.

Emissions Inventory

An emissions inventory is a quantification of all emissions within a selected physical or economic boundary. Sources of criteria pollutants are commonly grouped into the following categories for the purposes of emissions inventorying.

- **Area sources.** Includes emissions from architectural coatings, consumer products, hearths and fireplaces, and landscaping equipment. Architectural coatings (i.e., painting) can result in evaporative organic gases (e.g., ROG) from solvents contained in paints, varnishes, primers, and other surface coatings. Consumer products include but are not limited to detergents, cleaning compounds, polishes, and personal care products. Many of these products contain organic compounds, like ROG, which can be unintentionally or intentionally released during normal use. Hearths and fireplaces that combust wood generate particulate matter and ROG. Finally, landscaping equipment, such as lawnmowers, blowers, and trimmers, generates criteria pollutants and precursors from fuel combustion.
- **Energy sources.** Natural gas is often used in buildings for space heating and cooking. Criteria pollutants and precursors are generated by the consumption and combustion of this gas.³ Certain types of stationary sources, including emergency diesel generators, boilers, and turbines, may also be group together with energy sources, depending on their function.
- **Mobile sources.** Most vehicles are powered by fossil fuels (e.g., gasoline, diesel). Criteria pollutants and precursors are generated by the consumption and combustion of this fuel. Vehicles also generate fugitive dust from tire and break wear, as well as travel on paved and unpaved roads.

CARB maintains an annual emission inventory for each county and air basin in the state. The inventory for Sacramento County consists of data submitted to CARB by SMAQMD, plus estimates for certain source categories, which are provided by CARB staff. Based on CARB's 2016 SIP Emissions Projection Data, mobile source emissions represent most of the ROG, NO_x, and CO emissions in the county. Area sources represent the majority of PM₁₀ and PM_{2.5} emissions (California Air Resources Board 2019a).

Toxic Air Contaminants

Although ambient air quality standards have been established for criteria pollutants, no ambient standards exist for TACs. Pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. For TACs that are known or suspected carcinogens, CARB has consistently found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risks they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA).

Major sources of TACs in the vicinity of the plan area include roadways, railways, and stationary sources. U.S. Route 50 is a heavily traveled freeway located about a quarter mile from the main

³ Electricity is also used in almost every building. However, criteria pollutants and precursors emitted by electrical-generating facilities are regulated by the California Energy Commission and California Public Utilities Commission. Accordingly, criteria pollutants from offsite generation of electricity are excluded from project-level CEQA analyses.

hospital. The annual average daily traffic volume on this segment of U.S. Route 50 is about 210,000 vehicles per day (California Department of Transportation 2017). Union Pacific Railroad freight lines run to the east and west of the plan area, the closest of which is more than 2 miles away. According to SMAQMD's risk mapping tool, ambient cancer risk and PM_{2.5} concentrations at the main hospital from vehicle emissions on U.S. Route 50 and regional railways are 60 cases per million and 1.6 micrograms per cubic meter, respectively (Sacramento Metropolitan Air Quality Management District 2020b).

As discussed further below in Section 3.2.2, *Environmental Impacts*, there are several existing stationary sources currently operating on the UC Davis Sacramento Campus. These include emergency diesel generators, natural gas-fired boilers, a natural gas-fired turbine, and a gasoline dispensing facility. Criteria pollutants and TAC emissions from these stationary sources are controlled through SMAQMD's permitting process (Regulation 2). There are also three permitted emergency diesel generators operated by the County of Sacramento within 1,000 feet of the plan area, as well as a printing and lithograph shop (Sacramento Metropolitan Air Quality Management District 2020c). These sources contribute to existing ambient risks from TAC emissions.

Odors

Odors are generally regarded as an annoyance rather than a health hazard. However, person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). SMAQMD (2020a) has identified common land use types that typically generate odors, including recommended screening distances beyond which odors are less detectable. Land use types that are major sources of odors include wastewater treatment plants, landfills, composting and recycling facilities, petroleum refineries, asphalt batch plants, chemical and fiberglass manufacturing plants, painting/coating operations, rendering plants, coffee roasters, food packaging facilities, dairies, and metal smelting plants (Sacramento Metropolitan Air Quality Management District 2020a).

The plan area does not include any of the land use types identified by SMAQMD as odor sources. The nearest potentially odorous source is the Naked Lounge Coffee Roaster, which is about 0.7 mile from the future Aggie Square Phase I site. The coffee roaster has not received any odor complaints in the past three years (Muller pers. comm.). Sacramento County landfills and the regional wastewater treatment plant, as well as various recycling centers, are all more than 3 mile from the plan area, which is beyond SMAQMD screening distance.

Sensitive Receptors

SMAQMD (2020a) defines sensitive receptors as "facilities that house or attract children, the elderly, and people with illnesses or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors." For the purposes of impact assessment, the definition of sensitive receptors is expanded to include recreational facilities.

The UC Davis Sacramento Campus is bound by V Street on the north, Stockton Boulevard to the West, Broadway Street to the south, and a residential neighborhood to the east. Beyond Stockton Boulevard, V Street, and Broadway, residential land uses are located to the north, south, and west, and commercial land uses located to the south of the campus. The 2020 LRDP Update would continue operations of some of the campus's existing health care facilities; therefore, the nearest sensitive receptors would be located on the campus. The Language Academy of Sacramento is

directly east of the Aggie Square Phase I project area. Figure 3.2-2 shows current sensitive receptors within and adjacent (within 1,000 feet) of the plan area.

3.2.2 Environmental Impacts

This section describes the environmental impacts associated with air quality that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

Criteria pollutants and precursors resulting from implementation of the 2020 LRDP Update were quantified using standard and accepted software tools, techniques, and emission factors as described in detail below. A full list of assumptions and model outputs can be found in Appendices C through E.

Construction Criteria Pollutants and Precursors

Construction emissions were calculated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2 (California Air Pollution Control Officers Association 2017), as recommended by SMAQMD (2020a). Modeling was based on project-specific information (e.g., land use types, construction schedule, building sizes), where available, CalEEMod default values and assumptions based on typical construction activities. Construction emissions would originate from off-road equipment exhaust, vehicle exhaust (on-road vehicles), site grading and earth movement, demolition, application of architectural coatings, and paving. Each of these sources was considered in the 2020 LRDP Update construction analysis and CalEEMod modeling.

Table 3.2-5 summarizes the near-term construction projects that would occur under the 2020 LRDP Update between 2020 and 2030 (see also Appendix D). These projects include new building construction, parking and mobility improvements, existing building renovations and demolition, and new open space. Emissions from these projects were quantified using CalEEMod defaults for the project sizes and land use types. Annual and maximum daily construction emissions between 2020 and 2030 are based on the combined results of CalEEMod runs for these projects. The analysis also conservatively includes five projects that will be developed under the 2020 LRDP Update but have or are currently undergoing environmental review through a separate project-level CEQA document (listed as “Cumulative Projects”). Construction emissions from Aggie Square Phase I were quantified using project-specific construction details, as described further in Volume 2. Construction emissions from all other “Cumulative Projects” were obtained from their project-specific CEQA documents. These emissions were added to the combined results of the CalEEMod runs for other 2020 LRDP Update construction activities.

Table 3.2-5. 2020 LRDP Update Near-Term Construction Projects (2020 to 2030)

Construction Project	Project Size	Construction Start	Construction End
New Buildings^a			
Cancer Center Phase III	100,000 sf	Fall 2023	Fall 2025
Ambulatory Surgery Center	50,000 sf	Fall 2025	Winter 2027
Wellness Building	10,000 sf	Fall 2024	Summer 2025
Replacement Hospital Tower	800,000 sf ^b	Early 2023	Fall 2027
Aggie Square Phase I (Volume 2)	1,384,500 sf	Winter 2020	Spring 2023
Building #1	150,000 sf	Early 2024	Fall 2026
Building #2	150,000 sf	Early 2025	Fall 2027
Aggie Square Phase II Building #5	300,000 sf	Early 2026	Fall 2028
Aggie Square Phase II Building #6	300,000 sf	Early 2028	Fall 2030
Parking and Mobility Improvements			
Mobility Hub	35,000 sf	Fall 2020	Summer 2021
Parking Structure 5	1,300 spaces	Early 2026	Winter 2027
Rec Center Garage	450 spaces	Early 2024	Winter 2025
Cypress Surface Parking Lot	250 spaces	Early 2023	Winter 2024
Aggie Square Phase II Garage	800 spaces	Early 2026	Fall 2028
Existing Building Renovations			
Sherman Way Building	50,275 sf	Early 2025	Summer 2026
Facilities Support Services Building	73,407 sf	Fall 2020	Winter 2022
Broadway Building Seismic Project	109,570 sf	Fall 2020	Winter 2022
Ambulatory Care Center	375,000 sf	Early 2023	Summer 2027
Governor's Hall Addition	5,000 sf	Early 2027	Summer 2028
Additional Minor Renovations	300,000 sf ^c	Early 2021	Winter 2030
Existing Building Demolition			
Cypress Building	53,196 sf	Early 2023	Winter 2024
Open Space			
Parks and landscape buffers	13 acres	Early 2021	Winter 2030
Cumulative Projects			
Eye Center	58,000 sf	Summer 2020	Summer 2022
Rehabilitation Hospital	58,623 sf ^d	Fall 2020	Summer 2022
Parking Structure 4	1,300 spaces	Summer 2020	Fall 2021
North-South Wing Hospital Demolition	235,000 sf	Summer 2022	Summer 2022
Housestaff Demolition	19,483 sf	Fall 2020	Fall 2020

Source: Compiled by ICF based on information provided by UC Davis (Davis pers. comm. [a]). See also Appendix C. Refer to Appendix D for the CalEEMod outputs.

sf = building square feet; CalEEMod = California Emissions Estimator Model.

^a All new buildings were conservatively assumed to require minor roadway and/or access improvements, totaling 5 percent of their construction area.

^b Includes removal of the 120,000 square-foot East Wing of the main hospital.

^c Assumes 30,000 square feet of existing building renovation per year.

^d Includes removal of the 68,000 square foot existing facility.

The timing of specific construction projects beyond 2030 is not currently known. Appendix C presents a list of known and potential projects. While a certain amount of construction is likely to occur annually through 2040, the remaining development square footage was amortized over 4

years to present a worst-case and conservative assessment of the potential maximum daily and annual construction emissions that could theoretically occur under the 2020 LRDP Update. This approach assumes that one-quarter of the total development beyond 2030 could occur in a single year. For the purposes of analysis, emissions generated by this construction were modeled in 2031, corresponding to the year with the highest emission factors for equipment and vehicles. Table 3.2-6 summarizes the expected development potential for implementation of the 2020 LRDP Update beyond 2030 and shows the worst-case annual land use assumptions used in the modeling. CalEEMod defaults based on the worst-case annual construction square footage rates and land use types were used to quantify emissions. It is unlikely the University will ever construct one-quarter of their total expected development in a single year. However, this assumption was made for the CEQA document to present a worst-case analysis of potential air quality impacts should the Sacramento Campus achieve accelerated development.

Table 3.2-6. 2020 LRDP Update Long-Term Construction Land Use Assumptions (2031 to 2040)

Construction Type/Air Quality Model Land Use Type	Total Growth (2031 to 2040)	Average Annual Development ^a	Worst-Case Annual Development ^b
New Buildings^c			
University	61,785 sf	6,178 sf	15,446 sf
Hospital	278,460 sf	27,846 sf	69,615 sf
Residential	131,520 sf	13,152 sf	32,880 sf
General Office	82,380 sf	8,238 sf	20,595 sf
Medical Office	80,462 sf	8,046 sf	20,115 sf
Research and Development	226,544 sf	22,654 sf	56,636 sf
Warehouse	10,297 sf	1,030 sf	2,574 sf
Health Club	10,297 sf	1,030 sf	2,574 sf
Parking Structures	1,400 spaces	140 spaces	350 spaces
Existing Building Renovations	300,000 sf	30,000 sf	75,000 sf
Existing Building Demolition	500,000 sf	50,000 sf	175,000 sf
Existing Building Modification^d	148,000 sf	74,000 sf	74,000 sf

Source: Compiled by ICF based on information provided by UC Davis (Davis pers. comm. [a]). See also Appendix C. Refer to Appendix D for the CalEEMod outputs.

sf = building square feet; CalEEMod = California Emissions Estimator Model.

^a Amortizes growth over a 10-year period. Presented for informational purposes.

^b Conservatively assumes one-quarter of the total development beyond 2030 could occur in a single year.

^c All new buildings were conservatively assumed to require minor roadway and/or access improvements, totaling 5 percent of their construction area. All landscape buffers and open space were assumed to be planned and constructed between 2021 and 2030 (see Table 3.7-4).

^d UC Davis expects, as part of Aggie Square Phase II, to demolish the existing 98,000 square foot Courtyard by Marriott and construct an expanded 148,000 square foot hotel in its place. Construction would take approximately two years, including demolition. It was assumed that full demolition and half of the new building construction would occur during the worst-case analysis year.

Existing (2019)⁴ Operational Criteria Pollutant and Precursor Inventory

Existing buildings owned and operated by the University and processes on the UC Davis Sacramento Campus generate criteria pollutants and precursors. Emissions result from mobile sources (e.g., campus fleet), stationary sources (e.g., equipment at the Central Energy Plant), area sources (e.g., landscaping equipment), energy sources (e.g., purchased natural gas), and fugitive sources (e.g., laboratories). Criteria pollutants and precursors generated by these sources were calculated using a variety of models and reports, as described below. The analysis also accounts for operational criteria pollutants and precursors generated by existing On-Campus Partner Buildings (Courtyard by Marriott and Ronald McDonald House).

Mobile Sources

Mobile sources include campus fleet vehicles, medical helicopters, and vehicle trips made by employees, students, and patients (including deliveries). Each of these sources was considered in the mobile source inventory for the 2020 LRDP Update, as described in this section.

Campus fleet vehicles include Med-Transit Shuttle and all fleet services vehicles, including light-duty cars and trucks, passenger and cargo vans, and heavy trucks. Existing vehicle miles traveled (VMT) by each vehicle in the campus fleet were provided by UC Davis (Kirk pers. comm.). Emission factors for the campus fleet based on aggregated-speed emission rates by engine model-year and vehicle and fuel type were obtained from CARB's emission factor model, Emission FACTor model (EMFAC2017). Criteria pollutants and precursors generated by campus fleet vehicles were quantified by multiplying the EMFAC2017 emission factors by the trips and VMT inventory provided by UC Davis.

REACH Air Medical Services provides medical helicopter transport services to the UC Davis Sacramento Campus. The number of existing helicopter landings and departures at the Medical Center Tower II Heliport were provided by UC Davis (Davis pers. comm. [b]). Emission factors per landing and take-off (LTO) cycle for a Eurocopter EC135, which is the type of helicopter operated by REACH Air Medical Services, were obtained from the Federal Office of Civil Aviation (FOCA) (2015). Criteria pollutants and precursors generated by helicopter operations at the UC Davis Sacramento Campus were quantified by multiplying the FOCA emission factors by the LTO inventory provided by UC Davis.⁵

Vehicle trips made by employees, students, and patients commuting to the UC Davis Sacramento Campus generate criteria pollutants and precursors as vehicle exhaust. Existing trips and VMT were provided by Fehr & Peers (Hananouchi pers. comm.). The traffic data includes all commute and delivery-related activity based on travel demand modeling for the UC Davis Sacramento Campus. CARB's EMFAC2017 was used to obtain 2019 emission factors based on aggregated-speed emission

⁴ Where available, data for 2019 were used to quantify existing operational emissions. For some sources, records for 2019 were not available at the time of the analysis, and as such, data for 2018 were used. Because no major buildings or sources were constructed between 2018 and 2019, the 2018 data are considered the most accurate information currently available to estimate criteria pollutant emissions for those sources for which 2019 data had not yet been released.

⁵ Because the medical transport service is operated by a third party (REACH Air Medical Services), activity and thus emissions occurring outside of the LTO cycle at the Medical Center Tower II Heliport are beyond the control of UC Davis. Moreover, helicopter flight patterns and cruising operations are dictated by air transit authorities and emergency situations, which cannot be known or predicted. Accordingly, these emissions are not included in the analysis for the 2020 LRDP Update.

rates for all vehicle types operating in Sacramento County. Criteria pollutants and precursors generated by commute and delivery vehicle trips were quantified by multiplying the EMFAC2017 emission factors by the 2019 trip and VMT inventory provided by Fehr & Peers.

Stationary Sources

The Central Energy Plant provides normal and emergency electrical power, chilled and hot water for heating and cooling, and process steam to most campus buildings. The Central Energy Plant uses natural gas provided by Pacific Gas and Electric Company (PG&E). Existing stationary sources at the Central Energy Plant that generate criteria pollutants and precursors include five diesel emergency generators, five steam boilers and eight hot water boilers, one gas turbine, and four induced draft cooling towers. Two diesel emergency generators are also currently maintained at the Facilities Support Services Building and Administrative Support Building. Criteria pollutants and precursors generated by these existing stationary sources were obtained from UC Davis' 2018 Emissions Inventory Verification Statement (UC Davis Health 2019).

Area Sources

CalEEMod was used to estimate area source emissions generated by existing UC Davis Sacramento Campus buildings. Area sources include landscaping equipment, consumer products, and the routine application of architectural coatings. CalEEMod default values for the existing land use types and building square footages were assumed. Refer to Appendix C for a summary of the existing building inventory for the UC Davis Sacramento Campus and Appendix D for the specific air quality land use modeling assumptions.

Energy Sources

Buildings not connected to the Central Energy Plant directly purchase natural gas from PG&E. UC Davis provided existing PG&E fuel consumption records for these buildings (Olageuz pers. comm. [a]). Criteria pollutants and precursors generated by the combustion this gas were calculated by multiplying the purchased therms by the default nonresidential natural gas emission factors for each pollutant, as reported in the CalEEMod User Guide (Trinity Consultants 2017).

Fugitive Sources

Research activity in laboratories result in various ROG emissions from solvents and chemicals specific to the type of research being conducted. There are 15 buildings on the UC Davis Sacramento Campus with existing laboratories. Evaporative ROG emissions associated with these facilities were quantified using the same technique for estimating laboratory emissions as presented in the 2018 LRDP EIR for the UC Davis Campus (University of California, Davis 2018), which is based on emission factors developed for the University of California, Berkeley. The emission factors are given per square foot of laboratory space per second and are broken down by three general lab types. All UC Davis Sacramento Campus laboratories were classified as "general biological sciences" facilities. Evaporative ROG emissions resulting from these laboratories were quantified by multiplying the per square foot emission factors by the square footage of existing laboratories, which was provided by UC Davis (Olageuz pers. comm. [a]).

Evaporative ROG emissions are also generated by gasoline fuel tanks and pumping equipment, which are located at the Fleet Services Building. ROG emissions resulting from existing gasoline

dispensing activities were obtained from UC Davis' 2018 Emissions Inventory Verification Statement (UC Davis Health 2019).

On-Campus Partner Buildings

CalEEMod was used to estimate non-mobile source operational criteria pollutants and precursors generated by the existing on-campus partner buildings on the UC Davis Sacramento Campus. Both the Courtyard by Marriott and Ronald McDonald House are classified as hotels. CalEEMod default values for the hotel land use type were assumed and applied to the combined square footage for the buildings (116,000 square feet and 177 rooms). Mobile source emissions were quantified using EMFAC2017 and traffic data from Fehr & Peers (Hananoichi pers. comm.). Neither the Courtyard by Marriott nor Ronald McDonald House operate any stationary sources (e.g., generators) (Davis pers. comm. [c]).

Full Implementation (2040) LRDP Operational Criteria Pollutant and Precursor Forecast

Implementation of the 2020 LRDP Update would result in new and modified sources of criteria pollutants and precursors. The full build operational analysis quantifies emissions generated by the additional growth proposed under the 2020 LRDP Update, as well as emissions from existing sources expected to remain in service through 2040. The same types of emissions sources (e.g., mobile, stationary) would operate in 2040 as under existing conditions. Criteria pollutants and precursors generated by these sources under full implementation of the 2020 LRDP Update (2040) conditions were therefore calculated using similar methods as the existing inventory, as described further below. Table 3.2-7 summarizes the analysis methods for both the existing and full implementation operational emissions scenarios.

Table 3.2-7. Operational Criteria Pollutant and Precursor Analysis Methodology

Source	Existing (2019)	Full Implementation (2040)
Mobile – Campus Fleet	2019 emission factors from EMFAC2017 applied to existing campus fleet VMT from UC Davis.	Campus fleet assumed to grow by one gasoline vehicle per year and one diesel vehicle every five years. 2040 EMFAC2017 emission factors applied to projected 2040 campus fleet VMT.
Mobile – Helicopters	FOCA emission factors applied to existing helicopter LTO.	Growth in hospital sf applied to existing helicopter emissions.
Mobile – Commute Trips	2019 emission factors from EMFAC2017 applied to existing traffic data from Fehr & Peers.	2040 emission factors from EMFAC2017 applied to projected 2040 traffic data from Fehr & Peers.
Stationary – Generators	UC Davis 2018 Emissions Inventory Verification Statement.	No change in the operating conditions for the seven existing generators—emissions obtained from the existing inventory. Assumes one new 4,036 HP diesel generator at the Davis Tower and one new 3,451 HP diesel generator at the Central Energy Plant. Emissions from the generators quantified using CalEEMod.

Source	Existing (2019)	Full Implementation (2040)
Stationary – Boilers	UC Davis 2018 Emissions Inventory Verification Statement.	Growth in campus electric power load would require an 11% increase in natural gas consumption, which can be produced by the existing boilers and turbine. Emission factors for the boilers and turbine from the UC Davis 2018 Emissions Inventory Verification Statement applied to the projected future gas consumption.
Stationary – Turbine	UC Davis 2018 Emissions Inventory Verification Statement.	
Stationary – Cooling Towers	UC Davis 2018 Emissions Inventory Verification Statement.	No change in the operating conditions for the four existing cooling towers—emissions obtained from the existing inventory.
Area – Landscape, Consumer Products, Coatings	CalEEMod area source defaults for existing land use types and building sf.	CalEEMod area source defaults for future land use types and building square footages.
Energy – Purchased Gas	CalEEMod emission factors applied to existing purchased gas consumption from PG&E.	Gas consumed by existing facilities that will be demolished were removed from the analysis. No change in gas consumption from buildings that remain in service through 2040—emissions obtained from the existing inventory.
Fugitive – Laboratories	General biological sciences laboratory emission factors applied to existing laboratory sf.	Growth in building sf among those building types with existing laboratories applied to existing laboratory emissions.
Evaporative – Gasoline Dispensing	UC Davis 2018 Emissions Inventory Verification Statement.	Growth in campus gasoline vehicles applied to existing ROG emissions from gasoline dispensing activities.
On-Campus Partner Buildings – Mobile, Area, Energy, etc.	CalEEMod defaults and 2019 emission factors for existing On-Campus Partner Buildings land use types and building square footages.	CalEEMod defaults and 2040 emission factors existing On-Campus Partner Buildings (Courtyard by Marriot and Ronald McDonald House). See Volume 2 for details on Aggie Square Phase I. Emissions from the Rehabilitation Hospital obtained from its project specific CEQA document. Emissions for Aggie Square Phase II development modeled using CalEEMod and EMFAC2017.

EMFAC2017 = California Air Resources Board's Emission FACTor model; FOCA = Federal Office of Civil Aviation; sf = square feet; VMT = vehicle miles traveled; HP = horsepower; LTO = landing take off cycle; PG&E = Pacific Gas and Electric Company; CalEEMod = California Emissions Estimator Model.

Mobile Sources

UC Davis does not have a specific fleet replacement plan. However, based on historic growth, it was assumed that one additional gasoline vehicle would be purchased per year and one additional diesel vehicle would be purchased every five years (Tremblay pers. comm.). VMT by these new vehicles were calculated by multiplying the number of additional vehicles by the average VMT per vehicle from the existing fleet. The existing gasoline and diesel fleet and associated VMT were assumed to remain constant in the future. This approach is conservative because it is likely some of the existing gasoline and diesel vehicles would be replaced by electric vehicles overtime. Likewise, new vehicles purchased by the campus may be electric instead of gasoline or diesel, per UC Sustainable Practices Policy. However, without specific procurement details, the penetration of future electric vehicles is unknown, and thus emissions benefits were not included in the analysis. Emission factors based on aggregated-speed emission rates for the campus fleet vehicle types were obtained from CARB's

EMFAC2017 database. CARB's (2019b) SAFE Vehicles Rule adjustment factors were applied to the emission factors for gasoline-powered vehicles. Criteria pollutants and precursors generated by campus fleet vehicles were quantified by multiplying the EMFAC2017 emission factors by the projected 2040 trips and VMT for the campus fleet.

Future helicopter landings at the Medical Center Tower II Heliport were assumed to increase commensurate with growth in hospital gross square footage (gsf) on the UC Davis Sacramento Campus. This approach is conservative because it assumes all future hospital uses would influence medical helicopter transport. Because helicopters are primarily used to transport patients in critical condition, it is more likely only growth among emergency and critical care services would increase helicopter activity. While the amount of future hospital building gsf is known for the 2020 LRDP Update (refer to Appendix C), the exact increase in square footage that will be dedicated to emergency and critical care services is not. Criteria pollutants and precursors generated by future helicopter activity were therefore conservatively quantified by multiplying existing helicopter emissions by the expected growth in total hospital gsf with implementation of the 2020 LRDP Update.

Future expected trips and VMT with implementation of the 2020 LRDP Update were provided by Fehr & Peers (Hananouchi pers. comm.). CARB's EMFAC2017 was used to obtain 2040 emission factors based on aggregated-speed emission rates for all vehicle types operating in Sacramento County. CARB's (2019b) SAFE Rule adjustment factors were applied to the emission factors for gasoline-powered vehicles. Criteria pollutants and precursors generated by commute and delivery vehicle trips were quantified by multiplying the EMFAC2017 emission factors by the 2040 trip and VMT inventory provided by Fehr & Peers.

Stationary Sources

The *University of California, Davis Sacramento Campus Utility Master Plan* (UMP) analyzes major utilities and their ability to serve the UC Davis Sacramento Campus considering projected future growth (Affiliated Engineers, Inc. 2019). The UMP is based on an increase of 1.8 million gsf over current Central Energy Plant operations. This projection is consistent with the anticipated growth in gsf to be served by the Central Energy Plant with full implementation of the 2020 LRDP Update (refer to Appendix C).⁶ Accordingly, assumptions for future Central Energy Plant operations with implementation of the 2020 LRDP Update are based, in part, on the UMP. UC Davis staff were also consulted on appropriate growth assumptions, as described below.

The UMP studied three operational scenarios at the Central Energy Plant to serve the anticipated campus load growth. The "Business as Usual (CCHP With Cogeneration)" scenario was selected for the purposes of this CEQA analysis, based on direction from UC Davis staff (Davis pers. comm. [d]). This scenario assumes continued operation of existing Central Energy Plant systems, including cogeneration. All existing fossil fuel-powered stationary equipment at the Central Energy Plant would be maintained and continue to operate with full implementation of the 2020 LRDP Update. Criteria pollutants and precursors generated by the existing generators and cooling towers that would continue to operate at the Central Energy Plant were obtained from the existing emission inventory, as described above.

⁶ The UMP assumed the additional 1.8 million gsf would be added by 2030, whereas the implementation year for the 2020 LRDP is 2040. While growth is projected to occur more slowly under the 2020 LRDP Update than the UMP, the total gsf served by the Central Energy Plant, and thus electrical demand, is the same between the two plans.

One new 3-megawatt (3,451 horsepower) Tier 3 emergency diesel generator would be installed at the Central Energy Plant following completion of the Replacement Hospital Tower. Future runtime for the new generator is unknown because its operations will be dictated by emergency power needs. Assumptions for the maximum daily and annual operating hours for the new generator were therefore informed by runtime logs for existing generators at the Central Energy Plant (Panoushek pers. comm.; UC Davis 2019). Based on this information, it was assumed the new generator would operate a maximum of 1 hour per day and 33 hours per year. Emissions generated by this generator were estimated using emission factors from CalEEMod, as reported in the CalEEMod User Guide (Trinity Consultants 2017).

The UMP indicates that electric power load served by the Central Energy Plant is projected to grow from 17.2 megawatts under existing conditions to 19.4 megawatts with full implementation of the 2020 LRDP Update (growth of 2.2 megawatts) (Affiliated Engineers, Inc. 2019). This projection accounts for energy benefits achieved by demand side load reduction measures, pursuant to the UC Sustainable Practices Policy. Additional natural gas consumed to serve this added load is proportional to the heat input to the turbine. There is approximately a 5 percent increase in natural gas usage for every 1 megawatt of additional power output (Musat pers. comm.). UC Davis engineers therefore project an 11 percent increase in natural gas consumption at the Central Energy Plant to serve the additional 2.2 megawatts of electric power load associated with full implementation of the 2020 LRDP Update (Musat pers. comm.). Future criteria pollutant and precursor emissions were therefore calculated by scaling existing emissions from the boilers and turbine by a factor 1.11.

Like existing stationary source equipment at the Central Energy Plant, the emergency diesel generators at the Facilities Support Services Building and Administrative Support Building would continue to operate with full implementation of the 2020 LRDP Update. Criteria pollutants and precursors generated by these existing generators were obtained from the existing emission inventory, as described above. UC Davis would install one new 4,036 horsepower Tier 2 emergency diesel generator at the Davis Tower. Emissions generated by this generator were estimated using emission factors from CalEEMod, as reported in the User's Guide for CalEEMod (Trinity Consultants 2017). Future runtime for the new generator is unknown because its operations would be dictated by emergency power needs. Assumptions for the maximum daily and annual operating hours for the new generator were therefore informed by runtime logs for existing non-Central Energy Plant generators (Panoushek pers. comm.; UC Davis Health 2019). Based on this information, it was assumed the new Davis Tower generator would operate a maximum of 1 hour per day and 12 hours per year.

Area Sources

CalEEMod default values for the future projected land use types and building square footages were used to estimate area source emissions with full implementation of the 2020 LRDP Update. Refer to Appendix C, for a summary of the future building inventory for the UC Davis Sacramento Campus and Appendix D for the specific air quality land use modeling assumptions.

Energy Sources

Per the UC Sustainable Practices Policy, there would be no new buildings (other than Aggie Square Phase I, as discussed below) constructed under the 2020 LRDP Update that would purchase natural gas from PG&E.

Purchased natural gas (and thus emissions) by existing buildings not served by the Central Energy Plant was assumed to remain the same as under existing conditions, unless a building is planned to be demolished.⁷ This assumption is conservative because several of these existing buildings may undergo future renovation, which could improve their energy efficiency—per UC Sustainable Practices Policy, “major renovations” must achieve US Green Building Council (USGC) Leadership in Energy and Environmental Design (LEED) Silver certification. Acute care facilities and medical office buildings undertaking “major renovations” must outperform ASHRAE 90.1- 2010 by 30 percent (University of California 2019). However, without details on the specific renovations to occur, it is unknown to what extent existing natural gas consumption at these facilities may be reduced.

Fugitive Sources

Laboratory emissions generated by existing buildings were assumed to remain the same as under existing conditions (no existing laboratories are currently scheduled to be demolished). The exact number of future laboratories that may be constructed under the 2020 LRDP Update is not currently known. Laboratories are currently found in the main hospital, medical and general office buildings, research and development (R&D) facilities, and educational buildings. It is reasonable that some amount of laboratory space will be added among future buildings with similar land use designations. Accordingly, future laboratory emissions with implementation of the 2020 LRDP Update were calculated by scaling existing laboratory emissions by the anticipated growth in hospital, medical and general office, R&D, and educational gsf. This approach results in about 69,000 square feet of additional lab space, which is conservative because it assumes all future buildings within these land use designations would have a laboratory component.

Gasoline pumped at the Fleet Services Building was assumed to increase proportional to the campus fleet. Accordingly, ROG emissions from gasoline dispensing with implementation of the 2020 LRDP Update were calculated by scaling existing ROG emissions by the anticipated growth in gasoline-powered fleet vehicles.

On-Campus Partner Buildings

Operation of the existing Courtyard by Marriott and Ronald McDonald House was assumed to continue with full implementation of the 2020 LRDP Update. CalEEMod defaults were used to estimate future 2040 operational criteria pollutant and precursor generated by these facilities for all sources except mobile. Mobile source emissions were quantified using EMFAC2017 and traffic data from Fehr & Peers (Hananouchi pers. comm.).

Three new On-Campus Partner Buildings would be operational by 2030—Aggie Square Phase I, Rehabilitation Hospital, and Aggie Square Phase II. Criteria pollutants and precursors generated by Aggie Square Phase I in 2040 were calculated using the same methods and data described in Volume 2. Operational calculations and model inputs for the Rehabilitation Hospital were revised and re-run for 2040 emissions rates. Non-mobile source emissions generated by Aggie Square Phase II were modeled in CalEEMod based on the expected land use types and building square footages. CalEEMod defaults were assumed for all emission sources except energy. Pursuant to the UC Sustainable Practices Policy, Aggie Square Phase II would be designed and constructed without natural gas infrastructure (except for commercial cooking). Accordingly, natural gas consumption for

⁷ Natural gas is purchased from PG&E for the Cypress Building and the East Wing of the main hospital, which will both be demolished (see Table 3.2-5). Because the Cypress Building and East Wing will not be operational in 2040, natural gas consumption (and resulting emissions) for the buildings was removed from the full build analysis.

noncommercial gas consumption was set to zero. Mobile source emissions were quantified using EMFAC2017 and traffic data from Fehr & Peers (Hananouchi pers. comm.).

Human Health Risk Assessment from Exposure to Toxic Air Contaminants

Construction

Diesel-powered construction equipment would emit DPM that could expose nearby sensitive receptors to increased cancer and non-cancer risks. A human health risk assessment (HRA) was performed using EPA's most recent dispersion model, AERMOD (version 19191) and chronic risk assessment values recommended by OEHHA (2015). The HRA analyzes health risks to nearby sensitive receptors and consists of three parts: a DPM inventory, air dispersion modeling, and risk calculations. A description of each of these parts follows.

Diesel Particulate Matter Inventory

The DPM inventory includes emissions associated with construction activity. The construction DPM inventory is based on the CalEEMod outputs for diesel PM10 generated by onsite equipment and haul trucks.

Air Dispersion Modeling

The HRA used EPA's AERMOD, version 19191, to model annual average DPM concentrations at nearby receptors. Modeling inputs, including emissions rates (in grams per second) and source characteristics (e.g., release height, stack diameter, plume width), are based on guidance provided by OEHHA (2015) and SMAQMD (2018). Meteorological data were obtained from CARB for the Sacramento Executive Airport, which is approximately 3 miles southwest of the Sacramento Campus.

Construction equipment emissions were characterized as an area source (AREAPOLY), with a release height of 5.0 meters (Sacramento Metropolitan Air Quality Management District 2013). Haul truck emissions were characterized as a line/area source (LINEAREA) with a release height of 3.4 meters (U.S. Environmental Protection Agency 2015). Emissions from off-road equipment and water trucks were assumed to be onsite throughout the construction footprint. Emissions from off-site haul trucks were modeled along roadway segments adjacent to the Sacramento Campus along Broadway, Stockton Boulevard, X Street, and 2nd Avenue.

Analysts assumed construction hours of 9:00 a.m. to 5:00 p.m. five days per week between 2020 and 2040. To account for plume rise associated with mechanically generated construction emissions sources, the initial vertical dimension of area sources was modeled at 4.65 meters; for the line/area sources, it was modeled at 3.16 meters (U.S. Environmental Protection Agency 2011). The urban dispersion option with a Sacramento County population of 1,531,000 was also assumed.

Where sensitive receptor locations were identified within and surrounding the plan area, discrete receptors were placed at 20-meter intervals. Refer to Figure 3.2-1.

Risk Calculations

The risk calculations incorporate OEHHA's age-specific factors that account for increased sensitivity to carcinogens during early-in-life exposure. The approach for estimating cancer risk from long-term inhalation and exposure to carcinogens requires calculating a range of potential doses and multiplying those doses by cancer potency factors in units corresponding to the inverse dose. For cancer risk, the risk for each age group was calculated using the appropriate daily breathing rates, age sensitivity

factors, and exposure durations. The cancer risks calculated for individual age groups are summed to estimate the cancer risk for each receptor.

Chronic cancer and hazard risks were calculated using Equations 5.4.1 and 8.2.4a and Section 8.3.1, respectively, from OEHHA's (2015) guidance. All residential were modeled as residential; hospital receptors were likewise conservatively modeled as residential, assuming a 3rd trimester child would be born at the hospital and then require long-term care. The Language Academy of Sacramento was modeled as a school; recreational receptors were modeled as recreational.

Full Implementation (2040) LRDP Operations

Diesel-powered delivery trucks and onsite emergency generators would emit DPM. In addition, onsite boilers, labs, and the natural gas turbine within the Central Energy Plant would emit toxic metals and ROG that could expose nearby sensitive receptors to increased cancer and non-cancer risks. A HRA was performed using EPA's AERMOD (version 19191) and OEHHA (2015) guidance. The operational HRA consists of five parts: a DPM inventory, a toxic metals inventory, a ROG inventory, air dispersion modeling, and risk calculations. A description of each of these parts follows.

Diesel Particulate Matter Inventory

The operational DPM inventory is based on the emissions calculations for diesel PM₁₀ generated by the onsite generators and diesel-fueled delivery trucks (described above).

Toxic Metals Inventory

The operational toxic metals inventory is based on the emissions calculations for PM₁₀ generated by onsite boilers and the natural gas turbine (described above). Toxic metals embedded within the PM₁₀ compounds from boilers and the natural gas turbine were speciated using PM speciation profiles for natural gas-fired boilers and gaseous material combustion, respectively (California Air Resources Board 2018).

Reactive Organic Gas Inventory

The operational ROG inventory is based on the emissions calculations for ROG generated by onsite boilers, labs, and the natural gas turbine (described above). Carcinogenic organics from boilers and the natural gas turbine were speciated from the ROG output using organic gas speciation profiles for external combustion boilers – natural gas (California Air Resources Board 2018). Carcinogenic organics from labs were speciated from the ROG calculations using organic gas speciation profiles for Type II labs (University of California, Davis 2018).

Air Dispersion Modeling

The HRA used EPA's AERMOD model, version 19191, to model annual average DPM, toxic metals, and ROG concentrations at nearby receptors. Modeling inputs, including emissions rates (in grams per second) and source characteristics (e.g., release height, stack diameter, plume width), are based on guidance provided by OEHHA (2015). Meteorological data were obtained from CARB for the Sacramento Executive Airport.

Boiler, generator, turbine, and lab emissions were characterized as point sources (POINT). Off-site mobile emissions from delivery trucks were characterized as a line/area source (LINEAREA) with a release height of 3.4 meters (U.S. Environmental Protection Agency 2015). Emissions from off-site

delivery trucks were modeled along Broadway, Stockton Boulevard, V Street, 2nd Avenue, and 50th Street.

Emissions from delivery trucks, boilers, generators, labs, and the turbine were assumed to occur at any time during a year. To account for plume rise from delivery trucks, the initial vertical dimension of the area and line/area sources was modeled at 3.16 meters (U.S. Environmental Protection Agency 2011). Source release parameters associated with boilers, generators, labs, and the natural gas turbine are found in Appendix E. The urban dispersion option with a Sacramento County population of 1,531,000 was also assumed.

To allow AERMOD to incorporate algorithms to evaluate pollutant downwash on point source dispersion, dimensions and locations of all buildings on the UC Davis Sacramento Campus were incorporated into the modeling domain. The direction-specific building downwash dimensions were determined using the latest version (04274) of the Building Profile Input Program, PRIME (BPIP PRIME).

Sensitive receptors were placed at the same locations as the construction AERMOD run (described above). Additional onsite residential receptors were placed at the current location of Parking Lot 17 to account for anticipated residences that would be constructed during the year 2030 to 2040 timeframe. New residential and recreational receptors were also added for Aggie Square Phase I. The offsite Rehabilitation Hospital (completed in 2022) was likewise included in the analysis. A receptor height of 1.8 meters was assumed.

Risk Calculations

The risk calculations incorporate OEHHA's age-specific factors that account for increased sensitivity to carcinogens during early-in-life exposure. The approach for estimating cancer risk from long-term inhalation and exposure to carcinogens requires calculating a range of potential doses and multiplying those doses by cancer potency factors in units corresponding to the inverse dose. For cancer risk, the risk for each age group was calculated using the appropriate daily breathing rates, age sensitivity factors, and exposure durations. The cancer risks calculated for individual age groups were summed to estimate the cancer risk for each receptor. Chronic cancer and hazard risks were calculated using Equations 5.4.1 and 8.2.4a and Section 8.3.1, respectively, from OEHHA's (2015) guidance.

Correlation of Criteria Pollutants to Potential Human Health Consequences

The California Supreme Court's decision in *Sierra Club v. County of Fresno* (6 Cal. 5th 502) (hereafter referred to as the Friant Ranch Decision) reviewed the long-term, regional air quality analysis contained in the EIR for the proposed *Community Plan Update* and *Friant Ranch Specific Plan* (Friant Ranch Project). The Friant Ranch Project is a 942-acre master-plan development in unincorporated Fresno County within the San Joaquin Valley Air Basin, an air basin currently in nonattainment under the NAAQS and CAAQS for ozone and PM_{2.5}. The Court found that the EIR's air quality analysis was inadequate because it failed to provide enough detail "for the public to translate the bare [criteria pollutant emissions] numbers provided into adverse health impacts or to understand why such a translation is not possible at this time." The Court's decision clarifies that environmental documents must attempt to connect a project's regional air quality impacts to specific health effects or explain why it is not technically feasible to perform such an analysis.

Potential health effects associated with construction and operational criteria pollutants generated by the 2020 LRDP Update were estimated using SMAQMD's *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District* (Ramboll 2020). The guidance provides two

Excel calculators were developed from photochemical and health effects modeling of hypothetical projects throughout the Sacramento Federal Nonattainment Area (SFNA). The Minor Project Health Screening Tool provides insights on the health effects that may result from projects emitting NO_x, ROG, and PM_{2.5} at levels at or below 82 pounds per day, which corresponds to the highest daily emissions threshold of all SFNA air districts. The Strategic Area Project Health Screening Tool estimates health effects that may result from projects emitting NO_x, ROG, and PM_{2.5} at levels between 164 and 656 pounds per day and located within one of five strategic growth areas. The UC Davis Sacramento Campus is located within the model domain for the Sacramento strategic growth area (Huss pers. comm. [a]).

Importantly, outputs from SMAQMD's tools only include health effects of NO_x, ROG, and PM_{2.5} that have been researched sufficiently to be quantifiable (Ramboll 2020). These include the following health endpoints.

- Mortality (all-causes).
- Hospital admissions (respiratory, asthma, cardiovascular).
- Emergency room visits (asthma/respiratory).
- Acute myocardial infarction (nonfatal).

As noted in SMAQMD's guidance, research has identified other health effects for both PM_{2.5} and ozone precursors (ROG and NO_x) (Ramboll 2020). For example, exposure to PM_{2.5} at certain concentrations can alter metabolism, leading to weight gain and diabetes; cause cognitive decline, brain inflammation, or reduced brain volume; and affect gestation, resulting in low birthweight or preterm birth (Ramboll 2020). Likewise, at high enough doses, exposure to ozone can increase lung permeability, increasing susceptibility to toxins and microorganisms (Ramboll 2020). These and other effects (refer to Table 3.2-2) have been documented, but a quantitative correlation to project-generated emissions cannot be accurately established based on published studies (Ramboll 2020). Accordingly, these *potential* health effects of project-generated air pollution are qualitatively documented and disclosed in this section, Table 3.2-2, and under Impact LRDP-AQ-3a.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Conflict with or obstruction of implementation of the applicable air quality plan.
- A cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard.
- Exposure of sensitive receptors to substantial pollutant concentrations.
- Other emissions (such as those leading to odors) affecting a substantial number of people.

According to the State CEQA Guidelines Section 15064.7, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make significance determinations for potential impacts on environmental resources. As described above, SMAQMD is responsible for ensuring that state and federal ambient air quality standards are not violated within Sacramento County. The following sections summarize the local air district thresholds (where applicable) for each of the four impact criteria.

Plan Consistency

Projects that propose development that is consistent with the growth anticipated by the Sacramento Area Council of Governments (SACOG) and local plans, including the current 2010 LRDP, would be consistent with SMAQMD's Sacramento Regional OAP. SMAQMD's CEQA Guide (2020a) for plan-level analyses specifically recommends that analyses consider the following factors.

- The plan's consistency with the air quality plans and the MTP/SCS growth projections.
- The relationship between the plan's projected VMT and population growth (i.e., whether the two projections are proportional, or whether the VMT increases at a slower rate than population, indicating a successful mode shift).
- The extent to which the plan implements adopted transportation control measures.

SMAQMD's (2020a) CEQA Guide further notes that "by exceeding the District's mass emission thresholds for operational emissions of ROG, NO_x, PM₁₀ or PM_{2.5}, the project will be considered to conflict with or obstruct implementation of the District's air quality planning efforts." SMAQMD's mass emission thresholds are discussed further below.

Cumulatively Considerable Net Increase in Criteria Pollutants

This analysis evaluates the impacts of criteria pollutants generated by the 2020 LRDP Update using a two-tiered approach that considers both project- and plan-level guidance recommended by SMAQMD (2020a) in their CEQA Guide.

First, this analysis considers whether the 2020 LRDP Update would conflict with SMAQMD's AQMP, consistent with SMAQMD guidance for programmatic analyses, as described above under *Plan Consistency*. Second, calculated criteria pollutants and precursors are compared to SMAQMD's project-level thresholds. SMAQMD thresholds consider whether a project's emissions would result in a cumulatively considerable adverse contribution to existing air quality conditions, which do not currently attain the federal ozone, PM_{2.5}, or PM₁₀ standards. If a project's emissions would be less than these levels, the project would not be expected to result in a cumulatively considerable contribution to the significant cumulative impact. Accordingly, emissions generated by 2020 LRDP Update would result in a significant impact if any of the thresholds summarized in Table 3.2-8 are exceeded.

Table 3.2-8. SMAQMD's Cumulative Criteria Pollutant Mass Emission Thresholds

Pollutant	Construction	Operation
ROG	None	65 pounds per day
NO _x	85 pounds per day	65 pounds per day
PM ₁₀	80 pounds per day and 14.6 tons per year if all feasible BACT and BMPs are applied	Same as construction
PM _{2.5}	82 pounds per day and 15.0 tons per year if all feasible BACT and BMPs are applied	Same as construction

Source: Sacramento Metropolitan Air Quality Management District 2020a.

BACT = best available control technology; BMP = best management practices; NO_x = nitrogen oxide; PM₁₀ = particulate matter less than 10 microns in diameter; ROG = reactive organic gases.

SMAQMD's ROG and NO_x thresholds are based on emissions reduction targets that were set for new development projects in consideration of regional ozone attainment goals. The particulate matter thresholds align with the new source review permit offset levels, which are designed to prevent new emission sources from affecting attainment progress. SMAQMD thresholds therefore represent maximum emissions levels for new development required to support attainment of the NAAQS and CAAQS.

It is important to note that SMAQMD's project-level thresholds were developed to analyze emissions generated by a single project, and thus, are not well suited to an evaluation of emissions from a land use plan being evaluated at a programmatic level. Large-scale land use plans that consist of numerous individual developments will, by their nature, produce more criteria pollutants than single developments, even if the plans include efficiency measures to reduce future emissions. Use of the project-level thresholds to evaluate land use plans may therefore unfairly penalize the plans, yielding a significant and unavoidable conclusion simply due to scale. Thus, this EIR considers both SMAQMD's programmatic guidance related to AQMP consistency, as well as SMAQMD's numeric emission thresholds, per consultation with SMAQMD staff (Huss pers. comm. [b]).

Receptor Exposure to Substantial Pollutant Concentrations

All criteria pollutants that would be generated by the 2020 LRDP Update are associated with some form of health risk (e.g., lower respiratory problems). Criteria pollutants can be classified as either regional or localized pollutants. Regional pollutants can be transported over long distances and affect ambient air quality far from the emissions source. Localized pollutants affect ambient air quality near the emissions source. As noted above, the primary pollutants of concern generated by the 2020 LRDP Update are ozone precursors (ROG and NO_x), particulate matter, and TACs. The following sections discuss thresholds and analysis considerations for regional and local project-generated pollutants with respect to their human health implications.

Regional Pollutants (Ozone Precursors and Regional Particulate Matter)

Adverse health effects induced by regional criteria pollutant emissions generated by the 2020 LRDP Update (ozone precursors and particulate matter) are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). For these reasons, ozone precursors (ROG and NO_x) contribute to the formation of ground-borne ozone on a regional scale. Emissions of ROG and NO_x generated in one area may not equate to a specific ozone concentration in that same area. Similarly, some types of particulate pollution may be transported over long distances or formed through atmospheric reactions. As such, the magnitude and locations of specific health effects from exposure to increased ozone or regional particulate matter concentrations are the product of emissions generated by numerous sources throughout a region, as opposed to a single individual project. Moreover, exposure to regional air pollution does not guarantee that an individual will experience an adverse health effect because there are large individual differences in the intensity of symptomatic responses to air pollutant. These differences are influenced, in part, by the underlying health condition of an individual, which cannot be known.

Nonetheless, emissions generated by the 2020 LRDP Update could increase photochemical reactions and the formation of tropospheric ozone and secondary particulate matter, which at certain concentrations, could lead to increased incidence of specific health consequences, such as various respiratory and cardiovascular ailments. As discussed previously, air districts develop region-

specific CEQA thresholds of significance in consideration of existing air quality concentrations and attainment designations under the NAAQS and CAAQS. The NAAQS and CAAQS are informed by a wide range of scientific evidence that demonstrates there are known safe concentrations of criteria pollutants. Accordingly, the 2020 LRDP Update would expose receptors to substantial regional pollution if any of the thresholds summarized in Table 3.2-8 are exceeded.

Localized Pollutants (Particulate Matter and Toxic Air Contaminants)

Localized pollutants generated by a project are deposited and potentially affect population near the emissions source. Because these pollutants dissipate with distance, emissions from individual projects can result in direct and material health impacts on adjacent sensitive receptors. The localized pollutants of concern associated with the 2020 LRDP Update are particulate matter and TACs (including asbestos). Following are the applicable thresholds for each pollutant.

Particulate Matter

As shown in Table 3.2-8, SMAQMD has adopted particulate matter thresholds of significance to evaluate whether construction- and operations-generated particulate matter would result in an air quality impact. SMAQMD (2020a) also recommends implementation of BMPs to reduce dust emissions and associated localized health impacts.

Asbestos

Asbestos is the name given to several naturally occurring fibrous silicate minerals. Before the adverse health effects of asbestos were identified, asbestos was widely used as insulation and fireproofing in buildings, and it can still be found in some older buildings. SMAQMD considers a project to have a significant asbestos impact if the project does not comply with the applicable regulatory requirements outlined in Rule 902 to control asbestos from demolition or renovation of structures.

Other Toxic Air Contaminants

SMAQMD has adopted incremental cancer and hazard thresholds to evaluate receptor exposure to single sources of TACs. The “substantial” TAC threshold defined by SMAQMD is any exposure of a sensitive receptor to an individual emissions source resulting in an excess cancer risk level of more than 10 in 1 million or a non-cancer (i.e., chronic or acute) hazard index (HI) greater than 1.0. These threshold levels should be used to determine whether a project’s TAC emissions are cumulatively considerable (Sacramento Metropolitan Air Quality Management District 2020a). SMAQMD (2020a) also recommends area plans consider buffer zones around existing and proposed land uses that emit TACs. Such buffer zones should consider CARB (2005) guidance and be included in plan policies, land use maps, and implementing ordinances.

Odors Emissions

SMAQMD (2020a) does not have an explicit odor threshold but has established recommended odor screening distances. The air district recommends odor analyses consider the types of odors associated with a project, general locations of sensitive receptors, site meteorology, and prior odor complaints. Area plans that include odor-generating facilities should also consider buffer zones around those land uses, consistent with SMAQMD’s recommended screening distances.

Impacts and Mitigation Measures

Impact LRDP-AQ-1: Conflict with or obstruction of implementation of the applicable air quality plan

The 2020 LRDP Update includes growth not accounted for in SMAQMD's air quality attainment plans. Likewise, levels of criteria pollutants generated by the 2020 LRDP Update under full implementation would exceed SMAQMD's thresholds and could therefore impede SMAQMD's long-term emissions planning efforts. Mitigation Measures LRDP-AQ-1, LRDP-AQ-2a through LRDP-AQ-2e, and LRDP-TRA-1a would reduce this impact, but not to a less-than-significant level. Therefore, this impact would be **significant and unavoidable**.

The federal CAA requires that an air quality attainment plan be prepared for areas with air quality violating the NAAQS. The air quality attainment plan sets forth the strategies and pollution control measures that states will use to attain the NAAQS by the earliest practical date. SMAQMD's air quality attainment plans are based, in part, on regional population and employment (and thus VMT) growth projections from SACOG. Thus, a project's conformance with SACOG's MTP/SCS that was considered in the preparation of the air quality attainment plans would demonstrate that the project would not conflict with or obstruct implementation of plans.

According to SMAQMD's (2020a) CEQA Guide, the determination of air quality attainment plan consistency should consider the following factors for plan-level analyses.

- The plan's consistency with air quality plans and the MTP/SCS growth projections.
- The relationship between the plan's projected VMT and population growth (i.e., whether the two projections are proportional, or whether the VMT increases at a slower rate than population, indicating a successful mode shift).
- The extent to which the plan implements adopted transportation control measures.

SMAQMD (2020a) also considers projects that exceed their mass emission thresholds to conflict with or obstruct implementation of the regional air quality planning efforts.

Each of these items is addressed below for the 2020 LRDP Update.

Consistency with MTP/SCS Population Projections

As discussed in Section 3.2.1, *Existing Conditions*, SACOG's 2020 MTP/SCS was adopted in November 2019. While the 2020 MTP/SCS is SACOG's most current planning document, the Sacramento Regional OAP, which was prepared in 2017, was informed by SACOG's prior 2016 MTP/SCS. Growth projections for SACOG's 2016 MTP/SCS were based on state-of-the-art data, analysis, and local planning data that were available at the time of the 2016 MTP/SCS, including the 2010 LRDP for the UC Davis Sacramento Campus.

As discussed in Chapter 2, *Project Description*, UC Davis anticipates that under the 2020 LRDP Update, the on-campus population could grow over the next 20 years to include a population of 21,200, which is approximately 1,481 over the 2010 LRDP. UC Davis also anticipates growth up to 7,070,000 gsf, which is approximately 499,202 gsf above what was analyzed in the 2010 LRDP. The 2020 LRDP Update also supports up to 499 housing units, which were not envisioned under the 2010 LRDP. The additional population, development, and housing units supported by the 2020 LRDP Update represents growth that was not previously considered in the 2010 LRDP, and by

extension, the 2016 MTP/SCS. Accordingly, the 2020 LRDP Update would be inconsistent with the 2016 MTP/SCS growth projections, and because the SMAQMD's Sacramento Regional OAP is based on SACOG's 2016 MTP/SCS growth projections, the 2020 LRDP Update would likewise be inconsistent with that plan.

Relationship between Plan VMT and Population Growth

Senate Bill (SB) 743 was adopted in 2013 to integrate and better balance the needs of congestion management, infill development, active transportation, and GHG emissions reduction. There is a direct relationship between VMT and vehicle emissions, and thus, reducing VMT achieves GHG and criteria pollutant emissions reductions. Table 3.2-9 compares the campus population, daily VMT, daily per capita VMT, and average vehicle trip distances under existing conditions and with future implementation of the 2020 LRDP Update. Reductions in per capita daily VMT would further help the region attain the ambient air quality standards and support implementation of SMAQMD's air quality attainment plans.

Table 3.2-9. Population and Daily VMT Projections for the UC Davis Sacramento Campus

Metric	Existing	2020 LRDP Update	Growth Factor
Population	13,667	21,200	1.07
Daily VMT	397,448	719,047	1.81
Daily per capita VMT	29.08	33.92	1.17
Average trip distance	10.17 miles	9.79 miles	0.96

Source: Hananouchi pers. comm.

VMT = vehicle miles traveled.

As shown in Table 3.2-9, implementation of the 2020 LRDP Update is projected to increase daily VMT and daily per capita VMT, compared to existing conditions. This growth in VMT is associated with the additional population and building square footage under the 2020 LRDP. While VMT is projected to increase, the average distance traveled per vehicle trip with implementation of the 2020 LRDP Update is expected to be 0.37 mile less than under existing conditions. The 2020 LRDP Update includes onsite residential housing for staff and students. Aggie Square Phase I also includes ground-level commercial and restaurant space. This type of mixed-use design enables shorter local vehicle trips. While reducing trip distances is consistent with SB 743, the overall growth in VMT under the 2020 LRDP Update is projected to outpace campus population, leading to an increase in daily per capita VMT.

Implementation of Adopted Transportation Control Measures

Transportation control measures are strategies used by SMAQMD to reduce motor vehicle emissions. The Sacramento Regional OAP identifies 24 transportation control measures that were previously included in its 2013 ozone attainment plan. All measures except the Spare the Air Program were completed before 2020. The Spare the Air Program will continue to be implemented by SMAQMD through 2024. Spare the Air is a year-round public education program with an episodic ozone reduction element during the summer ozone season, plus general awareness throughout the rest of the year. The 2020 LRDP Update does not include any elements that would conflict with or impede successful implementation of SMAQMD's Spare the Air Program. Rather, the UC Sustainable Practices Policy and Green Commuter Program, which provides incentives for carpooling,

vanpooling, biking, walking, and using transit, supports implementation of the Spare the Air Program by raising awareness about mode shifting and reducing mobile source emissions. The Green Commuter Program also offers education and outreach throughout the year, including bike classes, transit field trips, and informational fairs. Refer to Chapter 3.8, Greenhouse Gases, for additional information on the Green Commuter Program.

Exceedances of SMAQMD Emission Thresholds

As described below under Impact LRDP-AQ-2, construction of building and facilities under the 2020 LRDP Update would not exceed SMAQMD's emissions thresholds with implementation of Mitigation Measures LRDP-AQ-2a through LRDP-AQ-2d. However, operational PM₁₀ emissions resulting from implementation of the 2020 LRDP Update would exceed SMAQMD thresholds, even with implementation of Mitigation Measures LRDP-AQ-2e and LRDP-TRA-1a. Accordingly, levels of PM₁₀ associated with the 2020 LRDP Update under full implementation could conflict with SMAQMD's air quality attainment plans and long-term emissions planning efforts for the Sacramento region.

Conclusion

Based on the above analysis, implementation of the 2020 LRDP Update could conflict with SMAQMD's air quality attainment plans, resulting in a significant impact. Mitigation Measures LRDP-AQ-2a through LRDP-AQ-2e and LRDP-TRA-1a, as described below under Impact LRDP-AQ-2 will reduce criteria pollutant and precursor emissions generated during both construction and long-term operations. Regardless of the emissions levels generated by the implementation of the 2020 LRDP Update, the anticipated growth is greater than what was assumed in the 2016 MTP/SCS, which informed the analysis and conclusions of the Sacramento Regional OAP. SMAQMD is required to prepare an air quality attainment plan to address EPA's 2015 ozone NAAQS by August 2022. Once adopted, this plan will guide future ozone attainment planning efforts in the Sacramento region. The plan will be based, in part, on planning assumptions from SACOG's 2020 MTP/SCS, which, based on consultation with SACOG, may not fully account for the growth anticipated under the 2020 LRDP Update (Hargrove pers. comm.).

Mitigation Measure LRDP-AQ-1 is required to ensure the administrative process to update SACOG's growth projections is completed, thus ensuring the air quality analysis and strategies contained within SMAQMD's forthcoming ozone attainment plan adequately consider implementation of the 2020 LRDP Update. Implementation of Mitigation Measure LRDP-AQ-1 will ultimately ensure that the 2020 LRDP Update is consistent with SMAQMD's long-term ozone planning efforts for the Sacramento region. However, updates to the growth projections and development of the ozone plan would be completed by external agencies (SACOG and SMAQMD) and are therefore beyond the direct control of the University. There is no feasible mitigation beyond Mitigation Measure LRDP-AQ-1 to avoid conflicts with SMAQMD's air quality attainment plans. Accordingly, this impact is conservatively determined to be **significant and unavoidable**.

The 2010 LRDP Final EIR concluded that the impact related to conflict with an air quality plan was less than significant with mitigation. The 2020 LRDP Update would result in a more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-AQ-1: Coordinate with SACOG and SMAQMD on Planning Assumptions

Within 90 days from certification of the 2020 LRDP Update Supplemental EIR, UC Davis will provide SACOG and SMAQMD with revised population, employment, building gsf, and housing growth forecasts that account for implementation of 2020 LRDP Update. UC Davis will coordinate with SMAQMD to ensure that emissions associated with campus growth can be accounted in their forthcoming plan to address the 2015 federal ozone standard.

Impact LRDP-AQ-2: Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard

Construction of buildings and facilities as part of the implementation of the 2020 LRDP Update would not exceed SMAQMD's emissions thresholds with implementation of Mitigation Measures LRDP-AQ-2a through LRDP-AQ-2d. However, operational PM₁₀ emissions resulting from implementation of the 2020 LRDP Update would exceed SMAQMD thresholds, even with implementation of Mitigation Measures LRDP-AQ-2e and LRDP-TRA-1a. Accordingly, this impact would be **significant and unavoidable**.

Construction

The predominant pollutants associated with construction of building and facilities under the 2020 LRDP Update are fugitive dust (PM₁₀ and PM_{2.5}) from earthmoving activities and combustion pollutants, particularly ROG and NO_x, from heavy equipment and trucks. ROG would also be generated from paving activities and application of architectural coatings. Table 3.2-10 presents the estimated construction emissions from implementation of the 2020 LRDP Update. The table compares maximum daily and annual emissions to SMAQMD's NO_x, PM₁₀, and PM_{2.5} thresholds. Although SMAQMD does not recommend ROG thresholds, estimates of construction-generated ROG emissions, which are an ozone precursor, are shown for information purposes only. Refer to Appendix D for a detailed summary of the modeling assumptions, inputs, and outputs.

As shown in Table 3.2-10, construction of the 2020 LRDP Update components would result an exceedance of SMAQMD's maximum daily NO_x threshold between 2020 and 2026, Construction activities would also exceed SMAQMD's maximum daily PM₁₀ threshold between 2021 and 2023. The exceedance of NO_x thresholds in multiple years is primarily due to exhaust from the combustion of diesel fuel in off-road construction equipment during simultaneous construction of multiple campus projects (see Table 3.2-5). Exceedances of SMAQMD's PM₁₀ threshold are primarily due to earthmoving activities (e.g., truck hauling and material loading and unloading) required for Aggie Square Phase I, which are described further in Volume 2.

Table 3.2-10. Estimated Unmitigated Construction Criteria Pollutants and Precursors for Implementation of the 2020 LRDP Update

Year	Maximum Daily Emissions (lb/day)				Annual Emissions (tpy)	
	ROG ^a	NO _x	PM10	PM2.5	PM10	PM2.5
2020	12	<u>113</u>	37	20	0.8	0.4
2021	63	<u>116</u>	<u>112</u>	60	2.2	1.2
2022	253	<u>149</u>	<u>113</u>	56	3.1	1.2
2023	348	<u>161</u>	<u>131</u>	61	3.9	1.5
2024	85	<u>136</u>	53	25	4.0	1.5
2025	111	<u>121</u>	47	20	3.5	1.3
2026	63	<u>128</u>	55	28	3.3	1.3
2027	51	67	10	4	1.0	0.4
2028	78	65	24	13	0.8	0.4
2029	16	34	5	2	0.6	0.3
2030	73	16	2	1	0.1	<0.1
2031–2040 ^b	226	75	44	18	2.6	1.4
SMAQMD Threshold ^c	–	85 ^d	80 ^d	82 ^d	14.6 ^d	15.0 ^d

Source: ICF modeling.

Note: Underline results indicate an exceedance of SMAQMD's threshold.

ROG = reactive organic gases; NO_x = nitrogen oxides; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; lb/day = pounds per day; tpy = tons per year.

^a Although SMAQMD does not recommend ROG thresholds, estimates of construction-generated ROG emissions, which are an ozone precursor, are shown for information purposes only.

^b Assumes one-quarter of all development would occur in a single year and that all construction would be concurrent.

^c In developing these thresholds, SMAQMD considered levels at which project emissions are cumulatively considerable. Consequently, exceedances of project-level thresholds would be cumulatively considerable.

^d With application of best management practices.

Estimated construction emissions associated with proposed uses in the 2020 LRDP Update would exceed SMAQMD's NO_x and PM10 thresholds. Thus, this impact would be significant.

Implementation of Mitigation Measure LRDP-AQ-2a is required to reduce fugitive dust emissions, consistent with SMAQMD's basic and enhanced construction emission control practices. Mitigation Measure LRDP-AQ-2b requires all off-road equipment to use renewable diesel and meet EPA-approved Tier 3 or 4 final emissions standards, depending on when construction occurs. The mitigation also requires construction equipment be maintained in proper working condition and to minimize idling time, consistent with SMAQMD best practices. While there is no threshold for ROG, Mitigation Measure LRDP-AQ-2c is required ROG emissions (which are precursors to ozone formation) from architectural coatings. Table 3.2-11 shows modeled emissions after mitigation.

As shown in Table 3.2-11, implementation of required mitigation would reduce PM10 emissions to below SMAQMD's threshold of significance, but emissions of NO_x would still exceed SMAQMD's maximum daily threshold of 85 pounds per day. Though NO_x emissions would only exceed SMAQMD's threshold during 3 years of the 20-year implementation period, this analysis addresses the impact of the 2020 LRDP Update in its entirety.

Table 3.2-11. Estimated Mitigated Construction Criteria Pollutants and Precursors for Implementation of the 2020 LRDP Update

Year	Maximum Daily Emissions (lb/day)				Annual Emissions (tpy)	
	ROG ^a	NO _x	PM10	PM2.5	PM10	PM2.5
2020 ^b	10	<u>107</u>	16	7	0.6	0.3
2021 ^b	33	69	37	18	1.5	0.5
2022	130	<u>103</u>	46	18	2.4	0.7
2023	178	78	64	24	2.9	1.0
2024	46	<u>86</u>	35	12	3.6	1.2
2025	58	77	32	11	3.1	1.0
2026	33	53	26	9	2.4	0.7
2027	25	26	8	2	0.8	0.2
2028	39	22	8	3	0.4	0.1
2029	8	11	3	1	0.4	0.1
2030	37	9	2	1	0.1	<0.1
2031–2040 ^c	111	29	14	5	0.7	0.3
SMAQMD Threshold ^d	–	85	80 ^e	82 ^e	14.6 ^e	15.0 ^e

Source: ICF modeling.

Note: Underline results indicate an exceedance of SMAQMD's threshold.

ROG = reactive organic gases; NO_x = nitrogen oxides; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; lb/day = pounds per day; tpy = tons per year.

^a Although SMAQMD does not recommend ROG thresholds, estimates of construction-generated ROG emissions, which are an ozone precursor, are shown for information purposes only.

^b Mitigation Measures AQ-2a through AQ-2c are not applied to the following cumulative projects, all of which would occur in 2020 and 2021: Eye Center, Rehabilitation Hospital, Parking Structure 4, North-South Wing Hospital Demolition, and Housestaff Demolition. While these projects are included within the development envelope of the 2020 LRDP Update, and are thus included in this analysis, CEQA clearance for these projects is being pursued under separate project-specific CEQA documents. Accordingly, these projects are not subject to the mitigation requirements of the 2020 LRDP Update Supplemental EIR.

^c Assumes one-quarter of all development would occur in a single year and that all construction would be concurrent.

^d In developing these thresholds, SMAQMD considered levels at which project emissions are cumulatively considerable. Consequently, exceedances of project-level thresholds would be cumulatively considerable.

^e With application of best management practices.

SMAQMD (2020a) recommends that if modeled NO_x emissions are not reduced to below 85 pounds per day with implementation of onsite mitigation, mitigation fees be provided to SMAQMD to offset project NO_x emissions that exceed the significance threshold. Accordingly, implementation of Mitigation Measure LRDP-AQ-2d is required. SMAQMD will use mitigation fees paid by UC Davis pursuant to Mitigation Measure LRDP-AQ-2d to fund offsite projects and programs that would offset the project's NO_x emissions. These measures would reduce construction emissions of NO_x from projects under the 2020 LRDP Update to **less than significant with mitigation**.

The 2010 LRDP Final EIR concluded that impacts related to violating an air quality standard were less than significant with mitigation. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust

Land use development projects as part of the implementation of the 2020 LRDP Update will require all construction contractors to implement the following measures to reduce construction-generated fugitive dust. Control of fugitive dust is required per SMAQMD Rule 403 and enforced by SMAQMD staff. The list of required measures was informed by SMAQMD's basic and enhanced construction emission control practices.

- Water exposed soil with adequate frequency to prevent fugitive dust and particulates from leaving the project site. However, do not overwater to the extent that sediment flows off the site. Exposed surfaces include, but are not limited to soil piles, graded areas, and unpaved parking areas,
- Suspend excavation, grading, and/or demolition activity when sustained wind speeds exceed 25 miles per hour (mph).
- Install wind breaks (e.g., plant trees, solid fencing) on the average dominant windward side(s) of construction areas. For purposes of implementation, chain-link fencing with added landscape mesh fabric adequately qualifies as solid fencing.
- For dust control in disturbed but inactive construction areas, apply soil stabilization measures adequate to mitigate airborne particulates as soon as possible.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Treat site accesses from the paved road with a 6- to 12-inch layer of wood chips, mulch, gravel, or other approved method to reduce generation of road dust and road dust carryout onto public roads.
- Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Establish a 15 mph speed limit for vehicles driving on unpaved portions of project construction sites.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of the SMAQMD will also be visible to ensure compliance.

UC Davis will ensure that the implementation of this mitigation measure is consistent with the UC Davis stormwater program and does not result in offsite runoff as a result of watering for dust control purposes.

Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust

Land use development projects as part of the implementation of the 2020 LRDP Update will require all construction contractors to implement the following measures to reduce construction-generated emissions from equipment and vehicle exhaust. The list of required measures was informed by SMAQMD's basic and enhanced construction emission control practices.

- For all development except Aggie Square Phase I, use construction equipment with engines meeting EPA Tier 3 or better emission standards prior to 2025 and EPA Tier 4 Final or better emission standards beginning in 2025. For Aggie Square Phase I, all engines must be EPA certified Tier 4 Final or better, regardless of construction year. Equipment requirements may be waived by UC Davis, but only under any of the following unusual circumstances: If a particular piece of off-road equipment with Tier 4 Final standards or Tier 3 standards is technically not feasible, not commercially available, or there is a compelling emergency need to use off-road equipment that does not meet the equipment requirements above. If UC Davis grants the waiver, the contractor will use the next cleanest piece of off-road equipment available, in the following order: Tier 4 Interim, Tier 3, and then Tier 2 engines.
- Use renewable diesel fuel in all heavy-duty off-road diesel-fueled equipment. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum diesel fuels sold in California.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (California Code of Regulations, Title 13, Sections 2449[d][3] and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation (California Code of Regulations, Title 13, Sections 2449 and 2449.1).
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings

Land use development projects as part of the implementation of the 2020 LRDP Update will require all construction contractors to use no- or low-solids content (i.e., no- or low-volatile organic compound [VOC]) architectural coatings with a maximum VOC content of 50 grams per liter.

Mitigation Measure LRDP-AQ-2d: Offset construction-generated NO_x emissions in excess of SMAQMD's threshold of significance

Construction-generated emissions of NO_x would exceed the SMAQMD's threshold of significance during 2020, 2022 and 2024.

Because construction-generated NO_x emissions would exceed SMAQMD's threshold of significance, UC Davis will pay a mitigation fee in the amount of \$4,558 and an administrative fee in the amount of \$228 to SMAQMD to reduce the project impacts from construction NO_x emissions to a less-than-significant level. This fee will be used to fund emissions reduction projects within the Sacramento Valley Air Basin. The types of projects that have been used in the past to achieve such reductions include electrification of stationary internal combustion engines (such as agricultural irrigations pumps); replacing old trucks with new, cleaner, more efficient trucks; and a host of other stationary and mobile source emissions-reducing projects. The fee

amount is based on an offset cost of \$30,000 per ton of NO_x and the total quantity of NO_x emissions in excess of SMAQMD's NO_x threshold (304 pounds or 0.15 ton based on the daily exceedances in 2020, 2022, and 2024). The administrative fee is 5 percent of the fee amount.

UC Davis will pay the mitigation and administrative fees in full prior to issuing a demolition or grading permit for the first project developed under the 2020 LRDP Update.

An alternative payment plan may be negotiated by UC Davis based on the timing of construction phases that are expected to exceed the SMAQMD's threshold of significance. Any alternative payment plan must be acceptable to SMAQMD and agreed upon in writing prior to issuance of a demolition or grading permit by UC Davis.

In coordination with SMAQMD, UC Davis, or its designee, may reanalyze construction NO_x emissions from the 2020 LRDP Update prior to starting construction to update the required mitigation and administrative fees. The analysis must be conducted using SMAQMD-approved emissions model(s) and the fee rates published at the time of reanalysis. The analysis may include onsite measures to reduce construction emissions if deemed feasible by UC Davis. All onsite measures assumed in the analysis must be included in the construction contracts and be enforceable by UC Davis.

Operation

The 2020 LRDP Update would result in new mobile, stationary, area, energy, and fugitive sources of criteria pollutant and precursor emissions, as discussed further in Section 3.2.2, *Methods for Analysis*. The net change in emissions with implementation of the 2020 LRDP Update compared to existing conditions represents the incremental impact of the plan analyzed in this document.

The operational emissions analysis for the 2020 LRDP Update includes quantifiable emissions benefits that will be achieved by the UC Sustainable Practices Policy. As discussed further in Section 3.7, *Greenhouse Gas Emissions*, the Sustainable Practices Policy includes a comprehensive set of strategies that will improve energy efficiency, increase renewable energy generation, reduce water consumption and waste generation, and encourage alternative transportation and low emissions vehicles. The following policies were quantified and included in the 2020 LRDP Update operational analysis.

- Demand side load reduction in buildings served by the Central Energy Plan stemming from green building design and energy efficiency improvements.
- Prohibition of natural gas infrastructure in new buildings constructed after 2019 not served by the Central Energy Plant.
- Regional factors accounted for in SACOG's travel model that reduce project related VMT, such as job accessibility, job/housing density, and job/housing mix and balance.

The UC Sustainable Practices Policy and associated programs would achieve additional criteria pollutant reductions through improvements in energy efficiency, increased penetration of electric vehicles (EVs) in the campus vehicle fleet, and support for alternative transportation and carpooling. However, these policies were not quantified because of constraints associated with the forecast method or because the exact number of affected structures is currently unknown. Operational emissions from implementation of the 2020 LRDP Update will therefore likely be lower than those quantified in this analysis. The analysis also fully accounts for emission generated by stationary sources. Stationary source emissions are controlled through SMAQMD's permitting process

(Regulation 2). Existing stationary sources on the UC Davis Sacramento Campus, such as the boilers and turbine at the Central Energy Plant, are designated Title V federal facilities within SMAQMD's jurisdiction. New stationary sources operated under the 2020 LRDP Update would be required to apply best available control technologies (BACT). UC Davis may also be required to purchase emission reduction credits (ERCs) to offset emissions from new sources, per SMAQMD guidance. The level to which emissions would be offset through ERCs would be determined at the time of the permit application process for new sources. As a conservative approach, emissions reductions from the purchase of ERCs are not included in this analysis.

Table 3.2-12 presents the estimated operational emissions under existing conditions and with implementation of the 2020 LRDP Update in 2040. The net change in emissions is compared to SMAQMD's ROG, NO_x, PM₁₀, and PM_{2.5} thresholds.

As shown in Table 3.2-12, the net change in operational ROG, NO_x, and PM_{2.5} emissions resulting from implementation of the 2020 LRDP Update would not exceed SMAQMD thresholds. The 2020 LRDP Update is projected to achieve a net reduction in operational NO_x emissions, compared to existing conditions. This decrease is due to expected improvements in vehicle engine technology, fuel efficiency, and turnover in older, more heavily polluting vehicles, which reduces exhaust emissions. The 2020 LRDP Update would generate additional VMT compared to existing conditions (Hananouchi pers. comm.). However, declining vehicle emission factors between 2019 and 2040 are enough to offset this increase in VMT and emissions from other sources, resulting in a net reduction in total project NO_x emissions.

Table 3.2-12. Estimated Operational Criteria Pollutants and Precursors for Implementation of the 2020 LRDP Update

Source	Maximum Daily Emissions (lb/day)				Annual Emissions (tpy)	
	ROG	NO _x	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Existing Conditions (2019)						
Mobile ^a	149	343	294	82	51.0	14.3
Stationary ^b	9	161	20	20	2.8	2.8
Area ^c	86	<1	<1	<1	<0.1	<0.1
Energy ^d	<1	3	<1	<1	<0.1	<0.1
Fugitive ^e	5	0	0	0	0.0	0.0
On-Campus Partner Buildings Projects ^f	7	11	8	2	1.5	0.4
Total Existing	257	519	323	105	55.3	17.5
2040 Implementation of the 2020 LRDP Update^a						
Mobile ^a	81	171	417	113	72.3	19.6
Stationary ^b	11	205	22	22	2.9	2.9
Area ^c	120	<1	<1	<1	<0.1	<0.1
Energy ^d	<1	3	<1	<1	<0.1	<0.1
Fugitive ^e	8	0	0	0	0.0	0.0
On-Campus Partner Buildings Projects ^g	81	83	122	34	21.0	5.7
Total 2020 LRDP Update	302	463	562	170	96.3	28.3
Net Change from Existing						
Mobile	-68	-172	123	30	21.3	5.3
Stationary	2	44	2	2	0.2	0.2
Area	34	<1	<1	<1	<0.1	<0.1
Energy	<0	<0	<0	<0	<0.0	<0.0
Fugitive	3	0	0	0	0.0	0.0
On-Campus Partner Buildings Projects	74	72	114	32	19.6	5.3
Total Net Emissions	45	-56	<u>239</u>	65	<u>41.1</u>	10.8
SMAQMD Threshold ^h	65	65	80	82	14.6	15.0

Source: ICF modeling.

Note: Underline results indicate an exceedance of SMAQMD's threshold.ROG = reactive organic gases; NO_x = nitrogen oxides; PM₁₀ = particulate matter less than 10 microns in diameter; PM_{2.5} = particulate matter less than 2.5 microns in diameter; lb/day = pounds per day; tpy = tons per year.^a Emissions from campus fleet vehicles, medical helicopter transport services, and vehicle trips made by employees, students, and patients commuting to the UC Davis Sacramento Campus.^b Emissions from diesel emergency generators, boilers, turbine, and cooling towers.^c Emissions from architectural coatings, consumer products, and landscaping equipment.^d Emissions from purchased natural gas by buildings not connected to the Central Energy Plant.^e Emissions from gasoline fuel tanks and pumping equipment and laboratory solvents and chemicals.^f Operating emissions from the Courtyard by Marriot and Ronald McDonald House.^g Operating emissions from the Courtyard by Marriot, Ronald McDonald House, Aggie Square Phase I, Rehabilitation Hospital, and Aggie Square Phase II.^h In developing these thresholds, SMAQMD considered levels at which project emissions are cumulatively considerable. Consequently, exceedances of project-level thresholds would be cumulatively considerable.

While operational ROG, NO_x, and PM_{2.5} emissions would be less than significant, daily and annual PM₁₀ would exceed SMAQMD's thresholds. The increase in PM₁₀ emissions above SMAQMD's thresholds is due almost exclusively to additional VMT expected under the project. PM₁₀ emissions from mobile sources are primarily associated with re-entrained road dust, which is a function of VMT and remains constant overtime. The 2020 LRDP Update would also be implemented over time, with a forecast for this analysis as shown in Tables 2-4, 3.2-5, and 3.2-6, with operations assumed to occur concurrently with portions of construction, potentially resulting in higher maximum daily PM₁₀ emissions than either component when analyzed separately. The modeled PM₁₀ emissions in excess of SMAQMD's daily and annual thresholds is a significant impact.

SMAQMD (2020a) recommends that lead agencies develop an Air Quality Mitigation Plan (AQMP) for land use development projects that will exceed SMAQMD's operational thresholds. The purpose of the AQMP is to reduce operational emissions from a project to the greatest extent practicable and in a manner that is both administratively and economically feasible. For projects that are operationally significant for particulates (PM₁₀ or PM_{2.5}), no specific percent reduction has been established as feasible mitigation (Sacramento Metropolitan Air Quality Management District 2020). SMAQMD recommends that projects with PM emissions above thresholds incorporate all mitigation possible to reduce project generated PM.

Appendix D presents the AQMP for the 2020 LRDP Update, which was prepared consistent with SMAQMD (2020d) guidance. While the 2020 LRDP Update increases VMT (and thus mobile source PM₁₀ emissions), compared to existing conditions, the UC Davis Sacramento Campus is considered a low-VMT area of the Sacramento region as demonstrated in all the mapping analyses conducted by SACOG for the 2020 MTP/SCS. The 2020 MTP/SCS acknowledges that "location within the region is very likely the most important variable in determining how much time people spend in their vehicles. Communities within existing urban areas, and with a mix and density of uses, tend to produce less VMT per resident than places that are farther away and spread out" (Sacramento Area Council of Governments 2019). In addition, the Sacramento Campus is served by Sacramento Regional Transit (Sac RT). The Light Rail Gold Line begins operation at 5 a.m. with service every 15 minutes during the weekday. The closest stop to the proposed project is at 39th Street, which is about 0.25 mile from the northern border of the plan area.

The 2020 LRDP Update proposes an increase in land uses that are complementary to the surrounding area, which will increase land use diversity and internal trip capture. As new facilities and population are added to the campus under the proposed 2020 LRDP Update, bicycle facilities would also be constructed and enhanced on the campus. For example, the 2020 LRDP Update includes the addition of bike lanes on 48th Street, consistent with the *City of Sacramento Bicycle Master Plan*, and a protected intersection is proposed to replace the existing traffic circle at the intersection of X Street / 48th Street to facilitate bicycle travel to the Class I shared-use path along the 48th Street alignment between V Street and X Street.

The LRDP Update is also being designed to minimize internal and external vehicle trips. Aggie Square Phase I, for example, includes proximate development of residential (up to 324 units) and commercial uses, with the goal of providing on-campus housing for educators and students. The 2020 LRDP Update also includes construction of up to 175 residential units. The additional on-campus housing provided by the 2020 LRDP Update reduces commute related vehicle trips because individuals can walk or bike to their place of work or study. The 2020 LRDP Update also substantially increases the density of on-campus uses (see Appendix C).

The UC Sustainable Practices Policy would contribute to operational emissions reductions by requiring all-electric buildings, energy efficiency improvements, and transition to clean fuels. UC Davis' Green Commuter Program, which provides incentives for carpooling, vanpooling, biking, walking, and using transit, would also contribute to mobile source PM10 reductions by raising awareness about mode shifting and reducing mobile source emissions. UC Davis also offers discounted transit passes to employees as part of their existing TDM program. Mitigation Measure LRDP-TRA-1a, as described in Chapter 3.15, *Transportation and Circulation*, will also support mode shifting and associated vehicle emissions reductions by facilitating service improvements that are necessary to improve transit performance and reliability. Through this measure and the 2020 LRDP Update, UC Davis plans to construct and operate a new mobility hub at 45th Street north of 2nd Avenue, which will provide a centralized transit center. UC Davis would also coordinate with and support the City of Sacramento on new roadway transit improvements along Stockton Boulevard, including potentially bus rapid transit. Mitigation Measure LRDP-AQ-2e is also required to reduce PM10 emissions by reducing vehicle trips, enhancing walkability and pedestrian network connectivity, and supporting low-emission and zero-emissions vehicles and equipment.

While Mitigation Measures LRDP-TRA-1a and LRDP-AQ-2e will contribute to mobile source emissions reductions, UC Davis does not have jurisdiction over transit service or vehicle trips. The effectiveness of Mitigation Measure LRDP-AQ-2e, for example, would depend on the cooperation of visitors, employees, patients, and vendors visiting the plan area. Reductions achieved by Mitigation Measures LRDP-TRA-1a and LRDP-AQ-2e may not be enough to reduce PM10 emissions to below SMAQMD's thresholds (refer to the AQMP in Appendix D for *potential* VMT and mobile source emissions reductions that may be achieved based on published literature). At the programmatic-level, there is no feasible mitigation beyond the UC Sustainable Practices Policy, UC Davis' Green Commuter Program, and Mitigation Measures LRDP-TRA-1a and LRDP-AQ-2e to reduce operational PM10 emissions below SMAQMD's thresholds. Accordingly, this impact would be **significant and unavoidable**.

The 2010 LRDP Final EIR concluded that impacts related to violating an air quality standard were less than significant. The 2020 LRDP Update would result in a more severe operations impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service

Refer to measure description under Impact LRDP-TRA-1 in Chapter 3.15, *Transportation and Circulation*.

Mitigation Measure LRDP-AQ-2e: Reduce operational PM10 emissions

UC Davis will implement a program that incentivizes employees, students, residents, and visitors to carpool, use electric vehicles (EVs), walk/bike, or use public transit to commute to and from the Sacramento Campus. The program will include, but is not limited to, the following features.

- **Parking:** Limit parking capacity to meet onsite demand and provide preferential parking to carpool vehicles, vanpool vehicles, and EVs. The program will implement the following parking related sub-measures.

- a. Provide no more onsite parking spaces than necessary to accommodate the number of employees working at a project site and/or the number of residents living at a project site, as determined by the project size and design.
 - b. Where feasible, for future residential units (on-campus and Aggie Square Phase I), lease/sell parking space separately from the unit and provide the tenant the option of not purchasing/owning a space.
 - c. Nonresidential land uses with 20 or more onsite parking spaces will dedicate preferential parking spaces to vehicles with more than one occupant and zero emission vehicles (including battery electric vehicles and hydrogen fuel cell vehicles). The number of dedicated spaces should be no less than two spaces or 5 percent of the total parking spaces on the project site, whichever is greater. These dedicated spaces will be in preferential locations such as near the main entrances to the buildings served by the parking lot and/or under the shade of a structure or trees. These spaces will be clearly marked with signs and pavement markings. This measure will not be implemented in a way that prevents compliance with requirements in the California Vehicle Code regarding parking spaces for disabled persons or disabled veterans.
 - d. Maintain a virtual or real “ride board” for employees and students to organize carpools and incentives for employees using public transit to commute to and from campus.
- **Vendor Trips:** Implement a program that incentivizes vendors to reduce the emissions associated with vehicles and equipment serving the UC Davis Sacramento Campus. The program will implement the following sub-measures to reduce vendor-related, mobile-source emissions.
 - a. Incentivize the use of electric vehicles or other clean fuels in their trucks and equipment.
 - b. Work with vendors, especially those using trucks, to reduce the number of vendor trips made to the campus through trip chaining, reducing the number of shipments, or other methods.
 - **Campus Shuttles:** Work with Fleet Services to convert Med-Transit (onsite) shuttles to electric or lower-emission fuels or implement emission control technologies to reduce criteria air pollutant emissions from existing conditions.
 - **Pedestrian and Bicycle Infrastructure:** Enhance walkability and connectivity of the Sacramento Campus to surrounding residential and commercial uses. The program will implement the following site design related sub-measures.
 - a. Ensure all new external connections from the Sacramento Campus to existing or planned streets include bicycle/pedestrian access.
 - b. Eliminate physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation throughout the Sacramento Campus.
 - c. Require all new sidewalks internal and adjacent to the Sacramento Campus to be at least 5 feet wide. Provide grade separation and wider sidewalks (e.g., 7 feet), wherever feasible.
 - d. Require all new sidewalks on the Sacramento Campus to include vertical curbs or a planting strip to separate the sidewalk from the parking or travel lane.

- e. Construct new roads on the Sacramento Campus to include at least one traffic calming feature, such as street parking, chicanes, horizontal shifts (lane centerline that curves or shifts), bollards, rumble strips, or woonerfs. Coordinate with the City of Sacramento to encourage these features on external roads connecting to the campus.
- f. Construct new intersections on the Sacramento Campus to include marked crosswalks, count-down signal timers, curb extensions, channelization islands, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, traffic circles or mini-circles. Coordinate with the City of Sacramento to encourage these features on external intersections connecting to the campus.
- **Landscaping Equipment:** Reduce emissions from landscaping equipment through the following sub-measures.
 - a. Beginning in 2030, require UC Davis landscapers and contracted landscaping companies that maintain campus greenspaces to utilize electric or alternatively fueled mowers and handheld equipment (e.g., trimmers, blowers).
 - b. Encourage xeriscape landscaping in all new campus greenspaces.

Impact LRDP-AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations

Compliance with SMAQMD Rule 902 and Mitigation Measures LRDP-AQ-2a and LRDP-AQ-2b would ensure the 2020 LRDP Update would not expose sensitive receptors to substantial asbestos emissions or localized particulate matter concentrations during construction. Likewise, Mitigation Measure LRDP-AQ-2a through LRDP-AQ-2d would reduce regional criteria pollutant and precursors emissions generated during construction to levels below which they would not significantly degrade regional air quality within the SVAB. However, operational PM₁₀ emissions could expose sensitive receptors to increase particulate pollution, even with implementation of Mitigation Measures LRDP-TRA-1a and LRDP-AQ-2e. Sensitive receptors could also be exposed to significant health risks from TAC emissions generated by construction and operations. Mitigation Measure LRDP-AQ-3b would reduce operational risks to less than significant, but construction risks would remain significant even with implementation of Mitigation Measure LRDP-AQ-3a. Accordingly, this impact would be **significant and unavoidable**.

Regional Criteria Pollutants

SMAQMD develops region-specific CEQA thresholds of significance in consideration of existing air quality concentrations and attainment or nonattainment designations under the NAAQS and CAAQS. Recognizing that air quality is a cumulative problem, SMAQMD typically considers projects that generate criteria pollutants and ozone precursor emissions that are below the thresholds to be minor in nature. Such projects would not adversely affect air quality or exceed the NAAQS or CAAQS. Moreover, photochemical and health risk modeling conducted by SMAQMD demonstrates that projects generating emissions below SMAQMD thresholds “do not on [their] own lead to sizeable health effects” (Ramboll 2020).

As described under Impact LRDP-AQ-2, construction of building and facilities as part of the implementation of the 2020 LRDP Update would not exceed SMAQMD’s emissions thresholds with implementation of Mitigation Measures AQ-2a through AQ-2d. However, operational PM₁₀ emissions resulting from implementation of the 2020 LRDP Update would exceed SMAQMD thresholds, even with implementation of the UC Sustainable Practices Policy, UC Davis’ Green

Commuter Program, and Mitigation Measures LRDP-TRA-1a and LRDP-AQ-2e. As such, levels of PM10 emissions associated with full implementation of the 2020 LRDP Update could contribute a **significant and unavoidable** level of particulate pollution that could degrade regional air quality within the SVAB.

Consistent with the Friant Ranch decision, Table 3.2-13 provides a conservative estimate of potential health effects associated with regional criteria pollutants generated by construction of building and facilities as part of the implementation of the 2020 LRDP Update. Because construction emissions would not exceed SMAQMD's thresholds with implementation of Mitigation Measures LRDP-AQ-2a through LRDP-AQ-2d, this analysis was conducted using SMAQMD's Minor Project Health Screening Tool (version 2). The results presented in Table 3.2-13 are conservative because they are based on a source generating 82 pounds per day of ROG, NO_x, and PM2.5 during each day of the year. As shown in Table 3.2-11, maximum daily emissions during most years of construction are well below 82 pounds per day, and NO_x emissions in excess of SMAQMD's threshold would be reduced to below 85 pounds per day with implementation of Mitigation Measure LRDP-AQ-2d.⁸ For these reasons, any increase in regional health risks associated with construction-generated emissions would be less than those presented in Table 3.2-13, which are already very small increases over the background incident health effect.

As shown in Table 3.2-12, the net change in operational ROG, NO_x, and PM2.5 emissions resulting from implementation of the 2020 LRDP Update would not exceed 82 pounds per day. SMAQMD's Friant Ranch screening tools are based on EPA studies that estimate health impacts from ozone and PM2.5, where the health effects of PM10 are represented using PM2.5 as a surrogate (Ramboll 2020). Accordingly, neither the Minor Project Health Screening Tool nor the Strategic Area Project Health Screening Tool have an input for PM10 emissions. While PM10 emissions exceed 82 pounds per day, particles less than 2.5 micrometers in diameter (i.e., PM2.5) pose the greatest risk to human health (Ramboll 2020; U.S. Environmental Protection Agency 2020c). PM2.5 is therefore used as the primary constituent for human health risk resulting from particulate matter exposure in EPA and SMAQMD tools. For this reason, the potential increase in regional health risks presented in Table 3.2-13, which are based on a source generating 82 pounds per day of ROG, NO_x, and PM2.5, are representative of on ongoing impacts from operation of the 2020 LRDP Update.

⁸ SMAQMD's construction NO_x threshold of 85 pounds per day is slightly higher than the modeled sources at 82 pounds per day. However, iterations of the guidance have stated "the screening health effects analysis results may be applied to the construction emissions given how close the significance thresholds are to each other (the same or within 4 percent) and the conservative assumptions in the health effects screening analysis" (Ramboll 2019).

Table 3.2-13. Conservative Estimate of Increased Regional Health Effect Incidence Resulting from Implementation of the 2020 LRDP Update (cases per year)

Health Endpoint	Age Range ^a	Annual Mean Incidences (model domain and 5-District Region) ^b	% of Background Incidence (and 5-District Region) ^c	Total # of Health Incidence (and 5-District Region) ^d
PM2.5 Emissions – Respiratory				
Emergency Room Visits, Asthma	0–99	1	<1%	18,419
Hospital Admissions, Asthma	0–64	<1	<1%	1,846
Hospital Admissions, All Respiratory	65–99	<1	<1%	19,644
PM2.5 Emissions – Cardiovascular				
Hospital Admissions, All Cardiovascular ^e	65–99	<1	<1%	24,037
Acute Myocardial Infarction, Nonfatal	18–24	<1	<1%	4
Acute Myocardial Infarction, Nonfatal	25–44	<1	<1%	308
Acute Myocardial Infarction, Nonfatal	45–54	<1	<1%	741
Acute Myocardial Infarction, Nonfatal	55–64	<1	<1%	1,239
Acute Myocardial Infarction, Nonfatal	65–99	<1	<1%	5,052
PM2.5 Emissions – Mortality				
Mortality, All Cause	30–99	2	<1%	44,766
ROG and NO_x Emissions – Respiratory				
Hospital Admissions, All Respiratory	65–99	<1	<1%	19,644
Emergency Room Visits, Asthma	0–17	<1	<1%	5,859
Emergency Room Visits, Asthma	18–99	1	<1%	12,560
ROG and NO_x Emissions – Mortality				
Mortality, Non-Accidental	0–99	<1	<1%	30,386

Source: SMAQMD Minor Project Health Screening Tool, version 2, published June 2020.

Note: The analysis point is in the center of the UC Davis Sacramento Campus at 38.552391, -121.451778.

ROG = reactive organic gases; NO_x = nitrogen oxides; PM2.5 = particulate matter less than 2.5 microns in diameter; EPA = Environmental Protection Agency; SMAQMD = Sacramento Metropolitan Air Quality Management District.

^a Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the EPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.

^b Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or “background health incidence”) values. Health effects are across the Northern California model domain and 5-air-district region (rounded values are equivalent).

^c The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, these background incidence rates cover the 5-air-district region (estimated 2035 population of 3,271,451 persons). Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP, as reported in SMAQMD’s Minor Project Health Screening Tool, version 2.

^d The total number of health incidences across the 5-air-district region is calculated based on modeling data, as reported in SMAQMD’s Minor Project Health Screening Tool, version 2. The information is presented to assist in providing overall health context.

^e Less Myocardial Infarctions.

While implementation of the 2020 LRDP Update would contribute to existing and future air pollution, it is important to consider the magnitude of project-generated emissions and potential health risks relative to ambient conditions. Operational PM₁₀ emissions generated by the 2020 LRDP Update are projected to represent less than 0.05 percent of the 2035 PM₁₀ emissions forecast for the SVAB (California Air Resources Board 2019c).⁹ The increased health effects potentially associated with the 2020 LRDP Update (see Table 3.2-13) are very small relative to the background regional incident health effect. Specific to just Sacramento County, the California Department of Public Health (2019) reported an annual average of 11,551 deaths from all causes between 2015 and 2017. The estimated two deaths for a project with emissions at or below air district thresholds (Table 3.2-13) are less than 0.02 percent of this total.

While the estimated health effects shown in Table 3.2-13 and the proportion of those effects relative to the regional and county background incidence are low, it is important to acknowledge that the model does not take into account population subgroups with greater vulnerabilities to air pollution, except in the analysis of age ranges for certain endpoints. As noted in SMAQMD's guidance, "the health effects of increased air pollution emissions may occur disproportionately in areas where the population is more susceptible to health effects from air pollution" (Ramboll 2020). The five determinates for increased susceptibility, as reported by the Centers for Disease Control and Prevention (2019), are genetics, behavior, environmental and physical influences, medical care, and social factors. The Public Health Alliance of Southern California has developed a Healthy Places Index (HPI) to characterize local community conditions, including several of these determinates. This data can be used to compare the overall relative health vulnerability of geographic areas. Based on the HPI, communities west of Stockton Boulevard have lower levels of health-promoting community conditions and may experience a disproportionate rate of health effects from the project compared to communities east of Stockton Boulevard (Public Health Alliance of Southern California 2020).

Ultimately, Sacramento County also does not attain the ozone, PM_{2.5}, or PM₁₀ NAAQS (see Table 3.2-4). Certain individuals residing in areas that do not meet the ambient air quality standards could be exposed to pollutant concentrations that cause or aggravate acute and/or chronic health conditions (e.g., asthma, lost work days, premature mortality), regardless of implementation of the 2020 LRDP Update.

Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust

Refer to measure description under Impact LRDP-AQ-2.

Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust

Refer to measure description under Impact LRDP-AQ-2.

Mitigation Measure LRDP-AQ-2c: Reduce evaporative emissions during architectural coatings

Refer to measure description under Impact LRDP-AQ-2.

⁹ CARB's emissions forecasts are only provided through 2035. Projected PM₁₀ emissions for the SVAB are 250 tons per day.

Mitigation Measure LRDP-AQ-2d: Offset construction-generated NO_x emissions in excess of SMAQMD's threshold of significance

Refer to measure description under Impact LRDP-AQ-2.

Mitigation Measure LRDP-AQ-2e: Reduce operational PM₁₀ emissions

Refer to measure description under Impact LRDP-AQ-2.

Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service

Refer to measure description under Impact LRDP-TRA-1 in Chapter 3.15, *Transportation and Circulation*.

Localized Particulate Matter

During earthmoving activities required for construction, localized fugitive dust would be generated. The amount of dust generated by a project is highly variable and dependent on the size of the disturbed area at any given time, the amount of activity, soil conditions, and meteorological conditions. Despite this variability in emissions, SMAQMD (2020a) acknowledges that there are numerous control measures that can be reasonably implemented to significantly reduce construction fugitive dust emissions. Mitigation Measure LRDP-AQ-2a requires regular watering, covering of materials, and other practices that will reduce construction-related fugitive dust emissions by up to 75 percent, depending on the construction year and emissions source. Mitigation Measure LRDP-AQ-2b would also reduce exhaust related particulate matter. With implementation of Mitigation Measures LRDP-AQ-2a and LRDP-AQ-2b, neither PM_{2.5} nor PM₁₀ emissions would exceed SMAQMD's thresholds of significance (see Table 3.2-11). Accordingly, localized particulate matter emissions would be **less than significant with mitigation** and would not expose receptors to substantial pollutant concentrations or risks.

Mitigation Measure LRDP-AQ-2a: Reduce construction-generated fugitive dust

Refer to measure description under Impact LRDP-AQ-2.

Asbestos

According to the California Department of Conservation's *A General Location Guide for Ultramafic Rocks in California*, there are no geologic features normally associated with naturally occurring asbestos (NOA) (i.e., serpentine rock or ultramafic rock near fault zones) in or near the plan area (California Department of Conservation 2000). As such, there is no potential for impacts related to NOA emissions during construction activities.

Demolition of existing structures results in particulates that may disperse asbestos containing materials (ACM) to adjacent sensitive receptor locations. ACM were commonly used as fireproofing and insulating agents prior to the 1970s. The U.S. Consumer Product Safety Commission banned use of most ACM in 1977 due to their link to mesothelioma. However, buildings constructed prior to 1977 that would be demolished as part of the implementation of the 2020 LRDP Update may have used ACM and could expose receptors to asbestos, which may become airborne with other particulates during demolition.

All demolition activities would be subject to EPA's asbestos NESHAP. Asbestos regulations protect the public by minimizing the release of asbestos fibers during activities involving the processing, handling, and disposal of ACM. The asbestos NESHAP regulations for demolition and renovation are referenced in SMAQMD Rule 902. Consequently, regulatory mechanisms exist that would ensure that impacts from ACM, if present during demolition occurring under the implementation of the 2020 LRDP Update, would be **less than significant**.

Other Toxic Air Contaminants

Construction

Construction of building and facilities under the 2020 LRDP Update has the potential to create inhalation health risks at receptor locations within and adjacent to the Sacramento Campus. The potential for project-generated TAC emissions to affect human health is typically assessed in terms of an increase in cancer risk and non-cancer health effects. Cancer risk is expressed as an incremental increase per million individuals. Non-cancer health effects are assessed by use of a HI, which is the sum of the ratios of each chemical's hazard quotient.¹⁰ Based on the emissions sources during construction, cancer and non-cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other TAC from construction. Accordingly, DPM is the focus of the construction health risk assessment.

Construction would result in DPM emissions primarily from diesel-fueled off-road equipment and heavy-duty trucks. Table 3.2-14 presets the maximum estimated health risks at receptor locations from exposure to construction generated DPM. Receptors includes recreational, residential, educational, and medical facilities, as shown in Figure 3.2-2. Both unmitigated risks and risks with implementation of Mitigation Measure LRDP-AQ-2b are presented in Table 3.2-14. Mitigation Measure AQ-2b is required to reduce exhaust emissions from construction equipment, as described under Impact LRDP-AQ-2, and therefore will directly reduce associated health risks.

As shown in Table 3.2-14, construction activities under the 2020 LRDP Update could expose existing recreational, residential, and medical receptors and the Language Academy of Sacramento to a significant increase in cancer risk. Because of the prevailing southerly winds, risks to existing residential receptors are greatest to those homes along the northern border of the Sacramento Campus. Construction emissions from Aggie Square Phase I are the primary contributing factor to increased health risk at the Language Academy of Sacramento. Future recreational and residential receptors located on the Aggie Square Phase I project site could also be exposed to significant cancer risk. This elevated risk is primarily the result of adjacent on-campus construction following completion of the project, including construction of Aggie Square Phase II.

¹⁰ The hazard quotient is determined for each TAC by comparing the modeled exposure level at a particular receptor location to the acceptable exposure level for that chemical; in other words, a hazard quotient is the fraction of a non-cancer health effects threshold, for a particular contaminant, experienced by a person at a particular location.

Table 3.2-14. Estimated Maximum Cancer and Chronic Hazard Risks from Construction-Generated DPM for the 2020 LRDP Update

Receptor Type	Cancer Risk (per million)		HI (unitless)	
	Unmitigated	Mitigated (LRDP-AQ-2b)	Unmitigated	Mitigated (LRDP-AQ-2b)
Existing				
Recreational (Shriners playground)	<u>13</u>	3	<1	<1
Recreational (all other)	8	5	<1	<1
Residential	<u>176</u>	<u>131</u>	<1	<1
Medical	<u>26</u>	3	<1	<1
Educational (Language Academy)	<u>77</u>	7	<1	<1
New				
Recreational (Aggie Square Phase I)	<u>43</u>	5	<1	<1
Residential (Aggie Square Phase I)	<u>69</u>	7	<1	<1
Residential (onsite in Plan Area)	<1	<1	<1	<1
Medical (Rehabilitation Hospital)	6	1	<1	<1
SMAQMD Threshold	10	10	1	1

Source: ICF modeling. All values have been rounded to the nearest whole number.

Note: Underline results indicate an exceedance of SMAQMD's threshold.

HI = hazard index; AQ = air quality; LRDP = long-range development plan.

Mitigation Measure LRDP-AQ-2b will achieve considerable reductions in DPM and corresponding health risks, as shown in Table 3.2-14. This measure is required to reduce construction generated NO_x, as described under Impact LRDP-AQ-2. With implementation of Mitigation Measure LRDP-AQ-2b, cancer risk at all receptor locations except existing impacted residential receptors would be reduced to a less than significant level. Mitigation Measure LRDP-AQ-3a is therefore required to further reduce receptor exposure to construction generated DPM. The measure includes restrictions on vehicle idling time and requires construction equipment be located as far as possible from receptors or used when adjacent sensitive receptors are present. The measure likewise encourages use EPA Tier 4 Final off-road engines for all construction, as well as newer haul trucks and alternatively fueled equipment. Financial assistance for high-efficiency residential HVAC filters, which remove a greater fraction of ambient PM_{2.5} compared to conventional filters, is also a component of the mitigation.

Recognizing that the 2020 LRDP Update will be implemented over 20-years by numerous construction contractors, Mitigation Measure LRDP-AQ-3a provides feasible options for reducing construction generated DPM. However, without specific details on how individual projects will implement the measure, a quantified analysis of health risks with Mitigation Measure LRDP-AQ-3a is not possible. Accordingly, this impact is conservatively concluded to be **significant and unavoidable**.

The 2010 LRDP Final EIR concluded that impacts related to exposing sensitive receptors to substantial TACs were less than significant with mitigation. The 2020 LRDP Update would result in a new or more severe impact.

Mitigation Measure LRDP-AQ-2b: Reduce construction-generated emissions from equipment and vehicle exhaust

Refer to measure description under Impact LRDP-AQ-2.

Mitigation Measure LRDP-AQ-3a: Reduce receptor exposure to construction generated diesel particulate matter

Land use development projects implemented under the 2020 LRDP Update will require its prime construction contractor to implement the following measures to reduce receptor exposure to DPM concentrations and associated health risks.

- Limit excess equipment idling to no more than 5 minutes (included in Mitigation Measure LRDP-AQ-2b).
- Locate operation of diesel-powered construction equipment as far away from sensitive receptors as possible.
- Use equipment during times when receptors are not present (e.g., when school is not in session or during non-school hours), as feasible.
- Establish staging areas for the construction equipment that are as distant as possible from offsite receptors, including existing residences.
- Where feasible, use equipment with engines meeting EPA Tier 4 Final or better emission standards prior to 2025 (Mitigation Measure LRDP-AQ-2b requires Tier 4 Final engines beginning in 2025 for all development except Aggie Square Phase I, which is required to use EPA Tier 4 Final or better engines regardless of the construction year).
- Where feasible, use haul trucks with on-road engines instead of off-road engines even for onsite hauling.
- Use electric, compressed natural gas, or other alternatively fueled construction equipment instead of the diesel counterparts, where available.
- Coordinate with existing off-campus homeowners where projected cancer risks exceed 10 per million and offer financial assistance to use Minimum Efficiency Reporting Value (MERV) 14 air filters. Financial assistance will be provided for the purchase of up to two filters per year, or per manufacturer recommendations. UC Davis will establish an online procurement system (or similar) to facilitate the purchase and distribution of the filters to residents electing to participate in the program.

Operation

The 2020 LRDP Update would modify existing TAC sources and introduce new sources of emissions. A comprehensive health risk assessment was conducted to evaluate receptor exposure to TACs from ongoing health care, education, research, and associated operations activities. The assessment included all existing and future TAC emissions associated with hospital and clinical uses, educational/research, laboratories, the Central Energy Plant, natural gas and diesel fired stationary combustion sources (including routine firing of backup emergency generators for testing and maintenance), and other sources (e.g., delivery vehicles). Like the construction health risk assessment, potential risks were estimated at on- and offsite recreational, residential, educational, and medical receptors, as shown in Figure 3.2-2.

Table 3.2-15 presets the maximum estimated health risks at receptor locations from exposure to operational TAC emissions.

Table 3.2-15. Estimated Maximum Cancer and Hazard Risks from Operations-Generated TAC for the 2020 LRDP Update

Receptor Type	Cancer Risk (per million)	HI (unitless)	
		Acute	Chronic
Existing			
Recreational (Shriners playground)	3	<1	<1
Recreational (all other)	4	<1	<1
Residential	<u>18</u>	<1	<1
Medical	1	<1	<1
Educational (Language Academy)	5	<1	<1
New			
Recreational (Aggie Square Phase I)	3	<1	<1
Residential (Aggie Square Phase I)	5	<1	<1
Residential (onsite in Plan Area)	<u>22</u>	<1	<1
Medical (Rehabilitation Hospital)	1	<1	<1
SMAQMD Threshold	10	1	1

Source: ICF modeling. All values have been rounded to the nearest whole number.

Note: Underline results indicate an exceedance of SMAQMD's threshold.

HI = hazard index.

As shown in Table 3.2-15, construction activities under the 2020 LRDP Update could expose existing and new residential receptors to a significant cancer risk. Testing and maintenance of the emergency generators (particularly those at the Central Energy Plant) is the primary contributing factor to the forecasted impact. Mitigation Measure LRDP-AQ-3b requires all generators utilize renewable diesel and outlines additional best available control technology for generators at the Central Energy Plant to reduce DPM emissions and associated health risks. Renewable diesel would reduce PM10 emissions and the corresponding risk contribution from emergency generators by 30 percent (Durbin et al. 2011; California Environmental Protection Agency 2015). Replacing existing Tier 0 generators with engines meeting EPA Tier 4 Final or better emission standards would reduce PM10 emissions (and thus risk) by approximately 89 percent (Trinity Consultants 2017). Likewise, retrofitting existing Tier 0 generators with diesel particulate filters would reduce emissions and risks by 85 percent (California Air Resources Board 2015). Increasing the generator stack height would reduce the maximum predicted cancer risk by 39 percent. Any of these three options, combined with use of renewable diesel, would reduce operational health risks from implementation of the 2020 LRDP Update to **less than significant with mitigation**.

The 2010 LRDP Final EIR concluded that impacts related to exposing sensitive receptors to substantial TACs were less than significant with mitigation. The 2020 LRDP Update would not result in a new or more severe impact.

Mitigation Measure LRDP-AQ-3b: Reduce receptor exposure to operations generated toxic air contaminants

UC Davis will require all diesel emergency generators on the Sacramento Campus to use renewable diesel fuel. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum diesel fuels sold in California. All diesel generators must be transitioned to renewable diesel fuel no later than December 31, 2039.

UC Davis will then employ a tiered approach to further reduce sensitive receptor exposure to toxic air contaminants generated by the Sacramento Campus Central Energy Plant. The selected control strategy must be implemented prior to December 31, 2039. The approach will be taken in the following way:

- Replace at least three of the existing Tier 0 generators with engines meeting EPA Tier 4 Final or better emission standards. If the engine cannot be replaced, then;
- Require at least three of the existing Tier 0 generators operate with the most effective California Air Resources Board Verified Diesel Emissions Controls (VDECs) available for the engine type (effectively level 3). If the engine cannot be retrofitted with VDECs, then;
- Require all existing Tier 0 generators without VDECs to increase the stack height by at least 20 feet.

Impact LRDP-AQ-4: Other emissions (such as those leading to odors) adversely affecting a substantial number of people

Like the 2010 LRDP, the 2020 LRDP Update does not contain any odor-generating facilities. Potential odors resulting from construction and daily activities on the UC Davis Sacramento Campus would be minor and would not adversely affect a substantial number of people. Therefore, this impact would be **less than significant**.

SMAQMD (2020a) considers wastewater treatment plants, landfills, composting and recycling facilities, petroleum refineries, asphalt batch plants, chemical and fiberglass manufacturing plants, painting/coating operations, rendering plants, coffee roasters, food packaging facilities, dairies, and metal smelting plants as potential odor emitting facilities. The UC Davis Sacramento Campus does not contain any of these facilities and no such facility would be added to the campus under the 2020 LRDP Update. Accordingly, buffer zones or facility-specific odor minimization policies are not needed.

Construction activities as part of the implementation of the 2020 LRDP Update would require the use of diesel-fueled equipment, architectural coatings, and asphalt paving, all of which can have an associated odor. However, these odors are generally not pervasive enough to cause objectionable odors affecting a substantial number of people. Moreover, while construction activities would occur over a relatively long period (i.e., up to 20 years), odors resulting from construction activity would occur in different areas of the 146-acre campus at different times over the 2020 LRDP Update implementation period and the impact of odors within 50 feet would be temporary. Consequently, construction of the campus facilities under the 2020 LRDP Update would not cause objectionable odors.

Operation related to implementation of the 2020 LRDP Update would result in various levels of odor emissions, such as odors associated with motor vehicle operation to food preparation to academic research. Diesel-fueled delivery trucks and their associated exhaust odors would haul materials to and from the academic and administrative, residential, recreational, and retail areas; however, these types of odor sources are not different from those that currently deliver materials to existing land uses in the plan area. The 2020 LRDP Update may include operation of new restaurant kitchens in the Aggie Square Phase I project area, but odors generated by kitchens are not typically considered to be objectionable and are also not different from the restaurant kitchens currently in the project vicinity off Stockton Boulevard and Broadway. Academic research using odorous materials would take place inside buildings with the appropriate laboratory hoods and ventilation equipment, as required by regulations. Compliance with these regulations would not result in substantial odorous emissions associated with research activities.

The land uses currently operating on the UC Davis Sacramento Campus and proposed under the 2020 LRDP Update are not considered to be a significant source of odors, per SMAQMD (2020a) and CARB (2005) guidance. In addition, new land uses would not be located near any potentially significant sources of odors for which complaints have been rendered. The nearest potential odor-generating facility to the campus is the Naked Coffee Roaster, which has not received any odor complaints in the past 3 years. Likewise, there have been no odor complaints made to SMAQMD against the UC Davis Sacramento Campus in the past 3 years (Muller pers. comm.).

Based on the above analysis, the 2020 LRDP Update would not cause odor effects nor expose receptors to adverse odors. The impact would be **less than significant**.

The 2010 LRDP Final EIR concluded that odor impacts would be less than significant. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

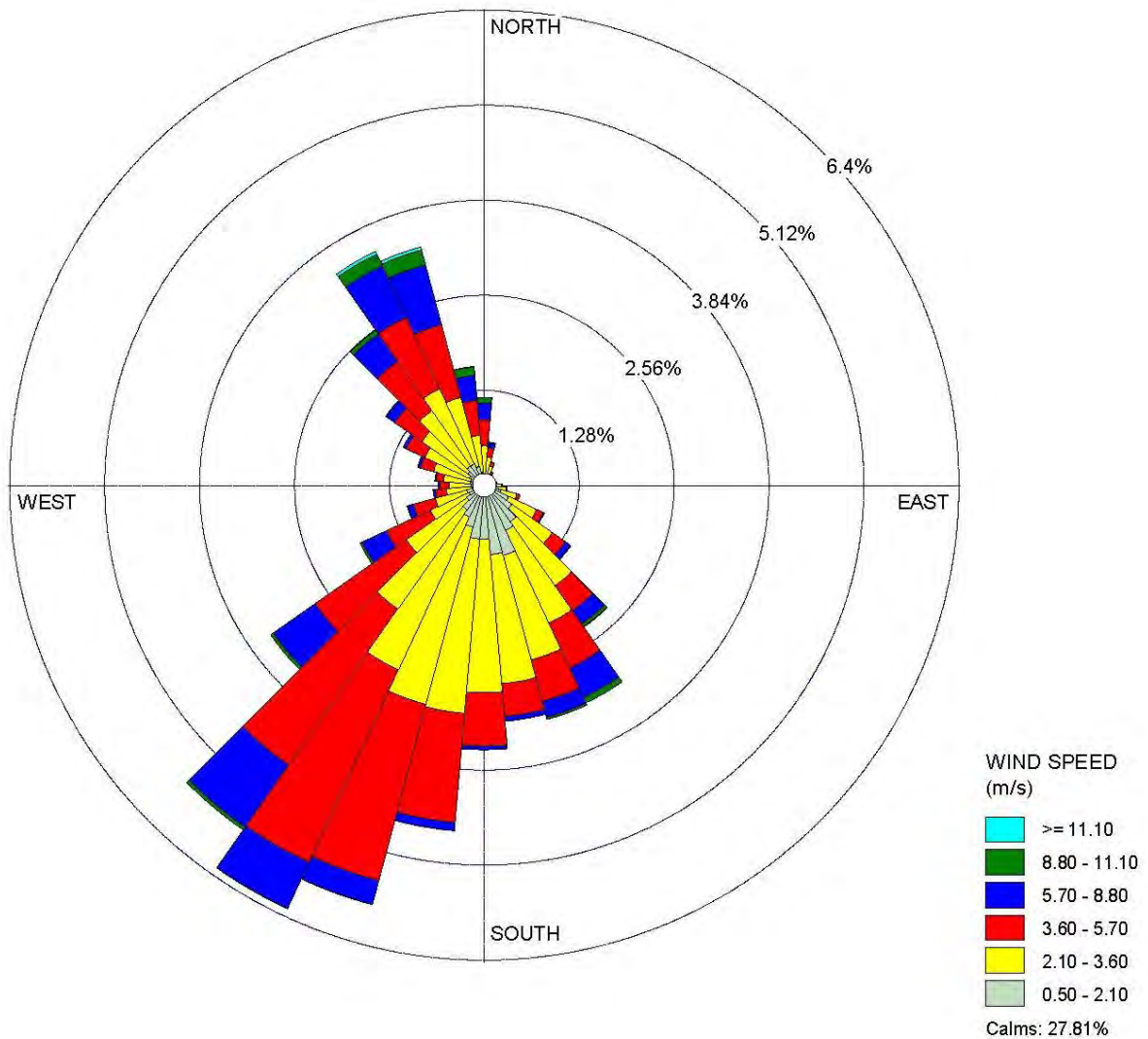
Mitigation Measures

No mitigation measures are necessary.

WIND ROSE PLOT:

Station #23232 - Sacramento Executive Airport 2010-2014

DISPLAY:

Wind Speed
Direction (blowing from)

COMMENTS:

DATA PERIOD:

Start Date: 1/1/2010 - 00:00
End Date: 12/31/2014 - 23:59

COMPANY NAME:

MODELER:

CALM WINDS:

27.81%

TOTAL COUNT:

41720 hrs.

AVG. WIND SPEED:

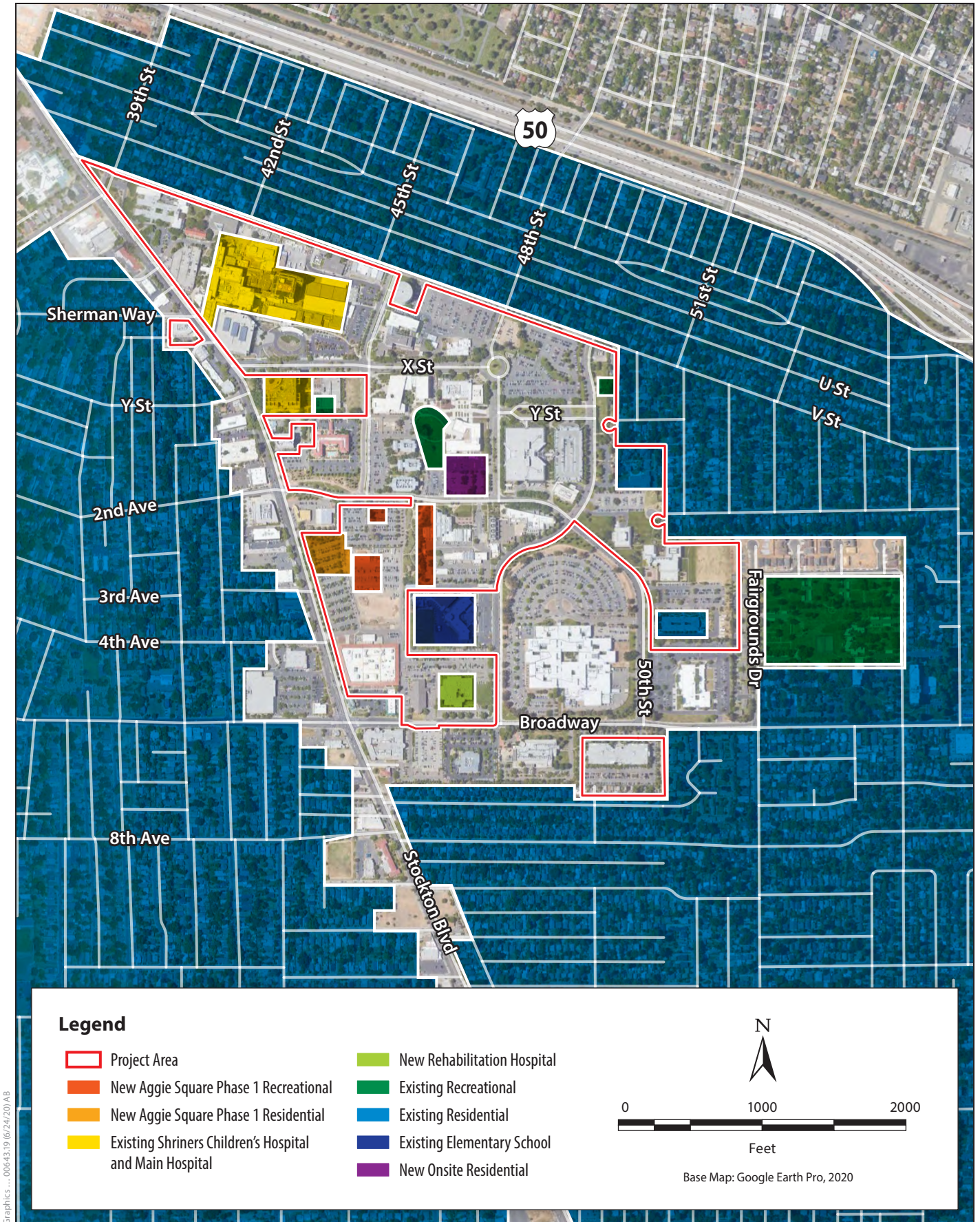
2.60 m/s

DATE:

3/16/2020

PROJECT NO.:

Figure 3.2-1
Prevailing Winds Near the Plan Area



3.3 Biological Resources

This section describes the regulatory and environmental setting for biological resources on the UC Davis Sacramento Campus in the LRDP plan area, analyzes effects on biological resources that would result from implementation of the 2020 LRDP Update, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts, if applicable.

In response to the Notice of Preparation for this Supplemental EIR, commenters expressed the following concerns related to biological resources.

- Recommended the use of habitat assessment and detection surveys.
- Noted the presence of potential habitat for nesting birds of prey in the plan area.
- Recommended the consideration of native plants for use in landscaping.

3.3.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, federal, state, and regional and local regulations, laws, and policies relevant to biological resources on the Sacramento Campus.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, 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.

UC Davis Tree Protection Standards

The UC Davis main campus has recognized two categories of on-campus trees that meet standards for important trees. Campus development projects avoid removal of these trees whenever possible. Important trees include:

- Heritage Trees: Healthy valley oak trees with trunk diameters of 33 inches or greater at a height of 24 inches from the ground.
- Specimen Trees: Healthy trees or stands of trees that are of high value to the campus because of their size, species, extraordinary educational and research value, and other exceptional local importance.

Federal

Federal Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA) (Title 16 of the United States Code Section 1531 et seq.), the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and

Atmospheric Administration, National Marine Fisheries Service (NMFS) regulate the “taking” of species listed in the ESA as threatened or endangered. In general, persons subject to ESA (including public agencies) are prohibited from “taking” endangered or threatened fish and wildlife species, and from “taking” endangered or threatened plants in areas under federal jurisdiction or in violation of state law. Under Section 9 of the ESA, the definition of “take” is to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” USFWS has also interpreted the definition of “harm” to include significant habitat modification that could result in take.

Two sections of the ESA address take. Section 10 regulates take if a non-federal agency is the lead agency for an action that results in take and no other federal agencies are involved in permitting the action. However, if a project would result in take of a federally listed species and federal discretionary action (even if a non-federal agency is the overall lead agency) is involved (i.e., a federal agency must issue a permit), the lead federal agency consults with USFWS under Section 7 of the ESA. Because this project may involve federal permits, interagency cooperation under Section 7 of the ESA may be required. Section 7 of the ESA outlines procedures for federal interagency cooperation to protect and conserve federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with USFWS and NMFS to require that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, provides for protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of migratory birds. The MBTA provides that it is unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. Under the MBTA, “take” is defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities.” Take does not include habitat destruction or alteration, if there is not a direct taking of birds, nests, eggs, or parts thereof. The current list of species protected by the MBTA can be found in Title 50 of the Code of Federal Regulations (CFR), Section 10.13. The list includes nearly all birds that are native to the United States.

State

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA), a permit from California Department of Fish and Wildlife (CDFW) is required for projects that could result in the “take” of a plant or animal species that is listed by the state as threatened or endangered. Under CESA, “take” is defined as an activity that would directly or indirectly kill an individual of a species, but the CESA definition of take does not include “harm” or “harass,” like the ESA definition does. As a result, the threshold for take is higher under CESA than under ESA. Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2081 incidental take permit.

California Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed the California Department of Fish and Game to carry out the legislature’s intent to “preserve, protect, and enhance endangered plants in this state.” NPPA gave the California

Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. CESA expanded upon the original NPPA and enhanced legal protection for plants. CESA established threatened and endangered species categories and grandfathered all rare animals—but not rare plants—into NPPA as threatened species. Thus, there are three listing categories for plants in California: Rare, Threatened, and Endangered.

California Fish and Game Code Sections 3503 and 3503.5

Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 of the California Fish and Game Code states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations include destruction of active nests as a result of tree removal or disturbance caused by project construction or other activities that cause the adult birds to abandon the nest, resulting in loss of eggs or young.

Fully Protected Species

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code describe the take prohibitions for fully protected birds, mammals, reptiles and amphibians, and fish. Species listed under these statutes may not be taken or possessed at any time and no incidental take permits can be issued for these species except for scientific research purposes or for relocation to protect livestock.

Regional and Local

City of Sacramento Tree Ordinance

Under the City of Sacramento tree ordinance (Ordinance 2016-0026), a permit is required to perform regulated work on “City Trees” or “Private Protected Trees” (which includes trees formerly referred to as “Heritage Trees”). City trees are characterized as trees partially or completely growing in a City park, on City owned property, or on a public right-of-way, including any street, road, sidewalk, park strip, mow strip or alley. Private protected tree is defined as a tree that is designated to have special historical value, special environmental value, or significant community benefit, and is on private property. Private protected trees are:

- All native trees at 12-inch diameter measured at standard height (DSH), which is 4.5 feet above ground level. Native trees include coast, interior, valley, and blue oaks; California sycamore; and buckeye.
- All trees at 32-inch DSH growing on land with an existing single family or duplex dwelling.
- All trees at 24-inch DSH growing on undeveloped land or any other type of property such as commercial, industrial, and apartments.

Environmental Setting

This section includes the environmental setting relevant to biological resources in the 2020 LRDP Update plan area.

Methods for Documenting Existing Biological Conditions

To evaluate and describe existing biological resources in the plan area and identify potential effects of implementation of the 2020 LRDP Update on those resources, ICF biologists reviewed existing databases and species lists for the plan area and vicinity and conducted a March 3, 2020, reconnaissance-level survey for biological resources on the Sacramento Campus (Appendix F). As part of the March 3, 2020, site visit, a reconnaissance-level survey was conducted from roads in and bordering the campus. Biologists walked the open space and other landscaped portions of the campus, as well as the central campus major open space and the parking lot on the west side of the campus.

The data reviewed included the following sources.

- California Department of Fish and Wildlife's (CDFW's) Natural Diversity Database (CNDDB) record search within a 5-mile radius of the plan area (California Department of Fish and Wildlife 2020).
- USFWS list of federally endangered, threatened, proposed, or candidate species evaluated for the project, using a database search of the USFWS Information, Planning, and Conservation System (IPaC) for the plan area (U.S. Fish and Wildlife Service 2020).
- California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants record search for the Sacramento East 7.5-minute quadrangle (California Native Plant Society 2020).
- UC Davis Sacramento Campus 2010 LRDP Final EIR (University of California, Davis 2010).

Sacramento Campus

The 146-acre UC Davis Sacramento Campus is in the Sacramento Valley, which is characterized by a Mediterranean climate with hot, dry summers and mild, rainy winters. At its closest point, the campus is approximately 1.5 miles southwest of the American River.

The campus is bounded by V Street on the north, Stockton Boulevard on the west, Broadway to the south, and a residential neighborhood to the east (Figure 3.3-1). The campus is in an urbanized area in the city of Sacramento and is surrounded by residential and commercial development.

Vegetation Communities and Land Cover Types

The Sacramento Campus is in an urban setting and is heavily developed. The campus comprises existing hospital facilities, support buildings, paved parking areas, a central campus major open space area, walkways, lawns, other landscaped areas, and isolated areas of undeveloped land. Vegetation communities and land cover types on the campus include urban landscaping/development and ruderal (i.e., weedy) grassland.

Urban Landscaping/Development

Where present, vegetation on the campus consists mostly of urban landscaping. Developed areas on the campus include buildings associated with UC Davis Health, roads, and parking lots (Figure 3.3-1). Planted trees are present in urban landscaping throughout the campus, including California native tree species such as Monterey pine (*Pinus radiata*), valley oak (*Quercus lobata*), interior live oak (*Quercus wislizeni*), and coast redwood (*Sequoia sempervirens*). Non-native tree species include red gum (*Eucalyptus camaldulensis*), blue gum (*Eucalyptus globulus*), southern

magnolia (*Magnolia grandiflora*), pine (*Pinus* sp.), London plane tree (*Platanus x hispanica*), and red oak (*Quercus rubra*). Areas of mowed turf grass, ornamental shrubs, and herbaceous flowering plants occur throughout the campus.

The campus has a large open space area in its central portion (see Figure 3.3-1). The central campus major open space area was established in compliance with a mitigation measure in the UCMDC 1989 LRDP EIR for impacts of campus development on urban wildlife. This area contains plantings of various species native to California, including blue elderberry (*Sambucus mexicana*), interior live oak, valley oak, willow (*Salix* sp.), and cypress (*Cupressus* sp.). Non-native species are also present in the open space area, including various non-native annual grasses and ornamental flowering species. Non-native trees in this area include blackwood acacia (*Acacia melanoxylon*), deodar cedar (*Cedrus deodara*), and a remnant patch of almond (*Prunus dulcis*) orchard. The central campus major open space area is not in a naturally occurring condition and is surrounded by development.

Ruderal

Remaining undeveloped areas on the campus that are not landscaped or part of designated open space are considered ruderal. Approximately 2 acres of ruderal habitat is present in an undeveloped former construction staging area in the eastern portion of the campus and on spoil piles in the unpaved part of the parking lot in the southwest campus (Figure 3.3-1). Undeveloped areas in the eastern portion of the campus are dominated by various non-native annual grass species and ruderal forbs, such as storksbill (*Erodium botrys*), black mustard (*Brassica nigra*), and yellow-star thistle (*Centaurea solstitialis*). Species present in the unpaved parking lot and associated spoils piles include non-native grasses and forbs, such as black mustard, ripgut brome (*Bromus diandrus*), stinkwort (*Dittrichia graveolens*), Italian ryegrass (*Festuca perennis*), telegraph weed (*Heterotheca grandiflora*), yellow annual sweetclover (*Melilotus indicus*), common groundsel (*Senecio vulgaris*), hedge mustard (*Sisymbrium* sp.), and spring vetch (*Vicia sativa*). Ruderal habitats attract fossorial mammal species, such as California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), and California vole (*Microtus californicus*).

Soils

There are three soil map units within the plan area: San Joaquin-Urban land complex, 0 to 2 percent slopes (219); Urban land (227); and Xerarents-Urban Land-San Joaquin complex, 0 to 5 percent slopes (240) (Natural Resources Conservation Service 2019). None of these map units is prime farmland, and none of the primary components is a hydric soil, although minor components of 219 and 240 are hydric. Refer to Chapter 3.6, *Geology, Soils, and Seismicity*, for further information regarding campus geologic conditions.

Aquatic Resources and Sensitive Communities

The campus does not support any waters of the United States, waters of the state, or sensitive natural communities (e.g., streams, wetlands, riparian areas) that would fall under the jurisdiction of federal or state resource agencies. Therefore, these sensitive resource categories will not be further addressed in this analysis.

Special-Status Species

Special-status species are plants and animals in the following categories.

- Listed or proposed for listing as threatened or endangered under ESA (50 CFR Section 17.12 [listed plants] and various notices in the *Federal Register* [proposed species])
- Listed as candidates for possible future listing (84 *Federal Register* 54732, October 10, 2019)
- Listed or candidates for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations Section 670.5)
- Listed as Fully Protected under the California Fish and Game Code (Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians])
- Animals identified by CDFW as species of special concern on the Special Animals List
- Plants listed as rare under the CNPPA (California Fish and Game Code Section 1900 et seq.)
- Plants considered to be “rare, threatened, or endangered in California” and assigned a California Rare Plant Rank (CRPR) (California Department of Fish and Wildlife 2020; California Native Plant Society 2020); the CDFW system includes rarity and endangerment ranks for categorizing plant species of concern, which are summarized as follows:
 - CRPR 1A: Plants are presumed to be extinct in California and either rare or extinct elsewhere
 - CRPR 1B: Plants that are rare, threatened, or endangered in California and elsewhere
 - CRPR 2: Plants that are extirpated, rare, threatened, or endangered in California but more common elsewhere
 - CRPR 3: Plants about which more information is needed (a review list)
 - CRPR 4: Plants of limited distribution (a watch list)
- Considered a locally significant species; that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (California Environmental Quality Act [CEQA] Section 15125 [c]) or is so designated in local or regional plans, policies, or ordinances (State CEQA Guidelines, Appendix G) or
- Otherwise meets the definition of rare or endangered under CEQA Sections 15380 (b) and (d)

Lists of special-status species with potential to occur on the campus were compiled based on queries of the CNDDDB (California Department of Fish and Wildlife 2020), species lists maintained by USFWS (U.S. Fish and Wildlife Service 2020), and the CNPS Online Inventory of Rare and Endangered Plants (California Native Plant Society 2020).

Special-Status Plants

Queries of the CNDDDB and CNPS online rare plant inventory returned records of the following two special-status plant species that occur within a 5-mile radius of the campus.

Sanford’s arrowhead (*Sagittaria sanfordii*) is a CRPR 1.B.2 species that is associated with marshes and swamps. This species has been documented at several locations within 5 miles of the campus, including sites along the American River, local creeks, and a drainage channel (California Department of Fish and Wildlife 2020). The nearest occurrence is approximately 1.25 miles east of the campus. The campus is primarily landscaped vegetation that is regularly maintained. The only undeveloped, open space areas on the campus do not have marsh, creek, or vegetated drainage

channel habitats that would be suitable for Sanford's arrowhead. Because suitable habitat to support this plant species is not present on the campus, Sanford's arrowhead is not expected to occur.

Valley brodiaea (*Brodiaea rosea* ssp. *vallicola*) is a CRPR 4.2 species that grows in grassland swales and vernal pools. This species is known to occur within the Sacramento East USGS 7.5-minute quadrangle (California Department of Fish and Wildlife 2020). The campus is primarily landscaped vegetation that is regularly maintained. The only undeveloped, open space areas on the campus do not have natural grassland swales, vernal pools, or wetland habitats of any kind. Because suitable habitat to support this species is not present on the campus, valley brodiaea is not expected to occur.

No other special-status plant species are expected to occur on the campus, given its developed and highly disturbed condition.

Special-Status Wildlife

Queries of the CNDDDB and USFWS species lists identified the following 15 special-status wildlife species that have been documented or have the potential to occur within a 5-mile radius of the campus.

- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)—federally threatened
- Vernal pool fairy shrimp (*Branchinecta lynchi*)—federally threatened
- Vernal pool tadpole shrimp (*Lepidurus packardii*)—federally endangered
- California red-legged frog (*Rana draytonii*)—federally threatened
- California tiger salamander (*Ambystoma californiense*)—state and federally threatened
- Giant garter snake (*Thamnophis gigas*)—state and federally threatened
- White-tailed kite (*Elanus leucurus*)—fully protected
- Purple martin (*Progne subis*)—species of special concern
- Bank swallow (*Riparia riparia*)—state threatened
- Swainson's hawk (*Buteo swainsoni*)—state threatened
- Burrowing owl (*Athene cunicularia*)—species of special concern
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)—state endangered and federally threatened
- American badger (*Taxidea taxus*)—species of special concern
- Delta smelt (*Hypomesus transpacificus*)—state endangered and federally threatened
- Central Valley steelhead (*Oncorhynchus mykiss*)—federally threatened

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetles are known to occupy elderberry shrubs within riparian habitats along the American River, approximately 2 miles northeast of the plan area (California Department of Fish and Wildlife 2020). Nine blue elderberry (*Sambucus Mexicana*) shrubs, the host plant for valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), are located within the campus major open space area (Figures 3.3-1 and 3.3-2). The nine elderberry shrubs in the plan area were planted during initial development of the open space area in compliance with a mitigation

measure in the UCMDC 1989 LRDP EIR to mitigate for impacts on urban wildlife. Historic aerial imagery of the campus major open space area in 1993 depicts the habitat as grassland with a few scattered trees located adjacent to existing buildings. Presently, vegetation in the vicinity of the elderberry shrubs consists of a variety of planted native and non-native trees, including valley oak, interior live oak, cedar, pine, acacia, manzanita, and almond trees. This habitat is considered non-riparian.

Based on the USFW's 2017 *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle*, occupancy of valley elderberry longhorn beetle within non-riparian habitats is assessed based on a several factors including, presence of exit holes, proximity to known occupied sites and riparian areas, and site locality in relation to historic riparian corridors. The presence of exit holes in a shrub increases the likelihood that the shrub is occupied by valley elderberry longhorn beetles; however, a lack of exit holes does not preclude occupancy (U.S. Fish and Wildlife Service 2017).

The nine elderberry shrubs present within the campus major open space area were surveyed for exit holes on March 3, 2020 by ICF wildlife biologist, Angela Alcalá. No exit holes were identified during this survey. Based on the lack of exit holes, additional information was assessed to determine likelihood of occupancy by valley elderberry longhorn beetle. The closest known occupied habitat is along the American River 1.9 miles northeast of the campus major open space area (CNDDDB occurrence 279: 2009) (California Department of Fish and Wildlife 2020). The closest riparian habitat is 1.9 miles to the northeast along the American River and 3.2 miles to the west along the Sacramento River. Land uses between the campus major open space area and these riparian corridors consists entirely of urban development with no contiguous habitat linking the open space area to suitable valley elderberry longhorn beetle habitat. As discussed above, the elderberry shrubs present within the plan area are not remnants from an historic riparian corridor but were planted during development of the campus major open space area.

Studies indicate that the valley elderberry longhorn beetles are poor dispersers and require contiguous or nearly contiguous vegetated habitat to successfully disperse (Collinge et al. 2001). Because its physical dispersal capability is limited, habitat fragmentation decreases the likelihood of successful colonization of unoccupied habitat. This lack of dispersing capability and the large distance (i.e., 1.9 miles) between elderberry shrubs in the campus major open space and the closest suitable riparian habitat make the potential of the species to disperse from the American River and to colonize the onsite elderberry shrubs extremely low. Therefore, valley elderberry longhorn beetles are not expected to occur in the plan area.

Aquatic Habitat Species

No suitable aquatic habitats (i.e., seasonal wetland, vernal pool, pond, emergent marsh, or perennial stream) are present in the plan area for vernal pool fairy shrimp, vernal pool tadpole shrimp, California red-legged frog, California tiger salamander, giant garter snake, Delta smelt, and Central Valley steelhead. Therefore, these species are not expected to occur in the plan area.

Purple Martin

Purple martins have been documented at several locations in the vicinity of the plan area, with the closest occurrence 0.35 mile north of the plan area (CNDDDB occurrence ID 20). The population of purple martins in Sacramento has shown a significant decline since 2004, reduced from 173 nesting pairs in 2004 to only 29 nesting pairs in 2018 (Airola and Kopp 2018). Purple martins in the Sacramento area primarily use weep/drain holes on the underside of freeway and major road

overpasses, including nearby colonies on Interstate 5, State Route 99, U.S. Route 50, and Sutterville Road (California Department of Fish and Wildlife 2020). Although there are no overpasses within the plan area, there is a potential for purple martins to nest within tree cavities or within crevices in existing buildings, particularly drainpipes, within the plan area.

Western Yellow-Billed Cuckoo and Bank Swallow

No suitable riparian or stream bank habitat is present in the plan area for western yellow-billed cuckoo or bank swallow. Therefore, these species are not expected to occur in the plan area.

Burrowing Owl

Burrowing owls occupy grasslands and other habitats characterized by low-growing vegetation. This species nests in subterranean burrows excavated by small mammals, most notably California ground squirrel. Burrowing owls will also use culverts and rock/debris piles within suitable habitat for nesting and winter refuge. The only undeveloped area in the plan area potentially large enough to support burrowing owls is within ruderal habitat along the eastern boundary of the plan area (see Figure 3.3-1). However, this area does not contain ground squirrel or other small mammal burrows suitable for burrowing owls. Additionally, areas bordering the campus, including Greenfair Park and Marian Anderson School, do not provide suitable habitat for burrowing owls given the absence of suitable burrow sites, scattered trees that provide potential roosts for burrowing owl predators (burrowing owls generally avoid such habitats), and irrigated lawns. Therefore, burrowing owls are not expected to occur in the plan area.

Swainson's Hawk and White-Tailed Kite

Swainson's hawk and white-tailed kites have been documented to nest in the vicinity of the plan area. There are numerous nesting records for Swainson's hawk and several records for white-tailed kite along the Sacramento River to the west and the American River to the north and east (California Department of Fish and Wildlife 2020). Swainson's hawks have also been reported to nest in urban areas within Sacramento, with the closest documented nest sites occurring 2 miles west of the plan area within redwood trees in the backyard of a residence (CNDDDB occurrence ID 2675) and at Freemont City Park (CNDDDB occurrence ID 2216). Most of the trees in the plan area are small to medium-stature landscape trees that are not expected to provide suitable nesting habitat for raptors. However, there are some large trees scattered throughout the plan area that could support raptor nesting. Although raptors generally avoid nesting in urban areas, some birds have acclimated to human disturbances and may nest in less desirable areas to avoid competition with other territorial raptors for nesting sites. Overall, there is a low potential for Swainson's hawk or white-tailed kite to nest in the plan area.

American Badger

American badgers require expansive areas of grasslands for denning and foraging. While the plan area supports some areas of ruderal/grassland habitat, these areas are small (i.e., less than 1 acre), heavily disturbed (i.e., actively used as parking and materials staging), and are surrounded by urban development. The plan area would not be suitable habitat for American badger and the species is not expected to occur in the plan area.

Wildlife Movement Corridors

Wildlife corridors are described as pathways or habitat linkages that connect discrete areas of natural open space otherwise separated or fragmented by topography, changes in vegetation, and other natural or manmade obstacles such as urbanization. As shown in Figure 3.3-1, the plan area is largely developed and is surrounded by dense urban development. There are no streams or open contiguous habitat areas that link undeveloped portions of the plan area to other natural or undeveloped areas outside the plan area that could support wildlife populations. Therefore, no established wildlife movement corridors exist within the plan area.

Wildlife movement within the plan area largely consists of migratory birds that could nest, forage, or take temporary refuge within vegetated and developed portions of the plan area. Tree and shrub nesting birds that are acclimated to human disturbances could use open space areas and landscape trees for nesting within the plan area. Structure-nesting birds such as swallows and swifts could nest on existing buildings in the plan area. Additionally, structure roosting bats could roost (day or night) on or within crevices in existing buildings and parking structures within the plan area.

3.3.2 Environmental Impacts

This section describes the environmental impacts associated with biological resources that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

The analysis of potential impacts to biological resources resulting from implementation of the 2020 LRDP Update is based on a comparison of baseline conditions, as described in Section 3.3.1, *Environmental Setting*, to conditions during construction and implementation of the 2020 LRDP Update. Evaluation of potential biological resource impacts is based on a review of existing species occurrence data and habitat requirements of species that could occur in the plan area and vicinity.

Under the 2020 LRDP Update, impacts on biological resources would largely occur within undeveloped areas of the Sacramento Campus. Based on the types of uses and activities that occur and would occur on the Sacramento Campus under the 2020 LRDP Update, this analysis focuses on the potential impacts associated with the conversion of undeveloped land to a developed condition and potential direct and indirect impacts on species as a result of construction activities. The approximately 2 acres of ruderal habitat within undeveloped land would be converted to a parking structure for the proposed Ambulatory Care land use and the unpaved part of the existing parking lot in the southwest campus would be converted to the Education, Research, and Housing land use.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- 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.

- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- A substantial adverse effect on state- or federally protected wetlands (e.g., marshes, vernal pools, coastal wetlands) through direct removal, filling, hydrological interruption, or other means.
- Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedance of the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

Issues not Evaluated Further

Section 3.3.1, *Environmental Setting*, discusses the special-status plants evaluated in this analysis and concludes that there is not suitable habitat for any special-status plants known to occur in the region surrounding the campus, and no other special-status plant species are expected to occur on the campus because of its developed and highly disturbed condition. This section additionally states that no riparian or sensitive natural communities occur on the campus. Finally, the section states that no waters of the United States or waters of the state are present on the campus. Because the campus does not support any special-status plant habitat, riparian habitat, sensitive natural communities, or state- or federally protected wetlands, these resources are not addressed further in this analysis.

There are no habitat conservation plans or natural community conservation plans that encompass the plan area, and this issue is not evaluated further.

Impacts and Mitigation Measures

Impact LRDP-BIO-1: Potential adverse impacts on valley elderberry longhorn beetle

Implementation of the 2020 LRDP Update could result in temporary construction disturbances and permanent modification to the central campus major open space that supports nine elderberry shrubs. These shrubs were evaluated during a field reconnaissance and, as discussed above, are not expected to be occupied by valley elderberry longhorn beetle. This impact would be **less than significant**.

Elderberry shrubs are considered potential habitat for valley elderberry longhorn beetle; however, the elderberry shrubs in the campus major open space are unlikely to be occupied by valley elderberry longhorn beetle because they were planted during development of the campus major open space area, are not part of a riparian zone, and are separated from known occurrences of valley elderberry longhorn beetle and suitable riparian habitat by dense urban development (see Figure 2-2). As discussed above, the location of these shrubs, in combination with the lack of exit holes indicate that valley elderberry longhorn beetle is not likely to be present within the plan area and is not likely to colonize the plan area in the future because the shrubs are located more than 2,526 feet from known occupied habitat or suitable riparian habitat (U.S. Fish and Wildlife

Service 2017). Therefore, the impact on valley elderberry longhorn beetle habitat would be **less than significant** and no mitigation is required.

The 2010 LRDP Final EIR concluded that implementation of the 2010 LRDP would have a less than significant impact on valley elderberry longhorn beetle with mitigation. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-BIO-2: Disturbance of vegetation-nesting migratory birds and raptors, including Swainson's hawk and white-tailed kite

Construction activities associated with implementation of the 2020 LRDP Update, such as ground disturbance, vegetation removal, construction equipment use, and general presence of active construction crews, could disturb nesting Swainson's hawks, white-tailed kites, and other nesting migratory birds and raptors. Construction-related disturbances that result in nest abandonment or failure, or mortality of chicks or eggs of migratory birds and raptors would violate the MBTA and California Fish and Game Code Sections 3503, 35.03.5 or 3511. Implementation of Mitigation Measure LRDP-BIO-2 would reduce this impact to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation**.

The plan area contains scattered trees, shrubs, and patchy ruderal grassland within existing developed areas, as well as heavily vegetated areas within the central campus major open space (Figure 3.3-2) that provide nesting opportunities for Swainson's hawk, white-tailed kite and other migratory birds and raptors. There are numerous nesting records for Swainson's hawk and several records for white-tailed kite along the Sacramento River and American River in the vicinity of the plan area (California Department of Fish and Wildlife 2020). Swainson's hawks have also been reported to nest in urban areas of Sacramento, with the closest documented nest sites occurring 2 miles west of the plan area within redwood trees in the backyard of a residence (CNDDDB occurrence ID 2675) and at John C. Fremont Park (CNDDDB occurrence ID 2216). If active migratory bird or raptor nests are present within or near areas proposed for construction as part of 2020 LRDP Update implementation, construction activities could result in the removal of active nests or disturbance of nesting birds, potentially resulting in nest abandonment, nest failure, or mortality of chicks or eggs.

Ruderal grassland habitat scattered throughout the plan area could also be used as foraging habitat for raptors and some migratory birds; however, these areas are limited (approximately 2 acres total) and are heavily disturbed (e.g., used as parking areas and for materials staging). Conversion of ruderal grasslands as part of implementation of the 2020 LRDP Update is not expected to substantially reduce foraging opportunities for migratory birds and raptors, including Swainson's hawk and white-tailed kite.

Loss or disturbance of actively nesting migratory birds and raptors, including Swainson's hawk and white-tailed kite, would be a significant impact. Implementation of Mitigation Measure LRDP-BIO-2 would reduce this impact to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation**.

The 2010 LRDP Final EIR concluded that the 2010 LRDP would result in a less than significant impact on nesting birds with mitigation. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-BIO-2: Conduct preconstruction surveys for nesting migratory birds and raptors, including special-status species, and establish protective buffers

For any projects implemented under the 2020 LRDP Update that would require vegetation removal (i.e., trees, shrubs, and ruderal vegetation) or would result in construction disturbances in the vicinity of vegetated areas, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts to Swainson's hawk, white-tailed kite, and other vegetation-nesting migratory birds and raptors, and to avoid violation of the MBTA, CESA, and California Fish and Game Code Sections 3503, 3503.5, and 3511.

- For construction activities that occur during the nesting season for migratory birds and raptors, between February 15 and August 31, the University will ensure that a qualified wildlife biologist familiar with the nesting behavior of bird species that occur in the plan area to conduct a preconstruction nesting bird survey. The nesting bird surveys will be conducted no more than 14 days prior to vegetation removal or construction disturbance activities near nesting habitat. The survey will include a search of all trees and shrubs, and ruderal areas that provide suitable nesting habitat for birds and raptors within the construction disturbance area. In addition, a 600-foot area around the construction area will be surveyed for nesting raptors and a 100-foot area around the construction area will be surveyed for songbirds.
- If no special-status raptor species (i.e., Swainson's hawk or white-tailed kite) or active bird or raptor nests are detected during the preconstruction surveys, then no additional measures are required. If an active nest is found in the survey area, a no-disturbance buffer will be established to avoid disturbance or destruction of the nest site until the end of the breeding season (generally August 31) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the construction area (this date varies by species). The extent of these buffers will be determined by a qualified biologist in coordination with any applicable agencies (as determined by species), and will depend on the level of noise or construction disturbance taking place, the line-of-sight between the nest and the disturbance, ambient levels of noise and other non-project disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species; however, a minimum of 50 feet for songbirds and 300 feet for raptors is typical. In developed habitats, buffer areas may be adjusted based on presence of existing barriers.

Impact LRDP-BIO-3: Disturbance of structure-nesting migratory birds, including purple martin

Construction activities associated with implementation of the 2020 LRDP Update that remove or modify existing building or parking structures could disturb an active purple martin or other structure-nesting migratory bird nest. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of a purple martin nest, or that of another migratory bird, would violate the MBTA and California Fish and Game Code Section 3503. Implementation of Mitigation Measure LRDP-BIO-3 would reduce this impact to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation**.

The plan area contains several existing buildings that would be modified or demolished as part of 2020 LRDP Update implementation. These existing structures provide potential nesting areas for purple martins and other urban-dwelling non-special-status bird species, such as barn swallows (*Hirundo rustica*) and white-throated swifts (*Aeronautes saxatalis*). Purple martins are a colonial, cavity-nesting species that adapts well in urban areas, often using abandoned woodpecker holes, human-made nest boxes, or cavities in other structures such as bridges and overpasses. In the Sacramento area, purple martins most commonly nest in drain holes on the underside of highway and major road crossings, often in the vicinity of a water source to provide foraging habitat (Airola and Kopp 2018). Although there are no previous nesting records in the plan area, purple martins could utilize crevices and drain holes in existing structures within the plan area for nesting. If active migratory bird nests are present within existing structures proposed for construction or demolition activities, these activities could result in the removal of active nests or disturbance of nesting birds, potentially resulting in nest abandonment, nest failure, or mortality of chicks or eggs.

Loss or disturbance of actively nesting migratory birds, including purple martin, would be a significant impact. Implementation of Mitigation Measure LRDP-BIO-3 would reduce this impact to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation**.

The 2010 LRDP Final EIR concluded that the 2010 LRDP would result in a less-than-significant impact on nesting birds with mitigation. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-BIO-3: Modify existing structures during the non-breeding season for purple martin and other structure-nesting migratory birds or implement exclusion measures to deter nesting

For any projects implemented under the 2020 LRDP Update that would modify or demolish any existing building structures, the following measures will be implemented prior to initiation of construction to avoid and minimize impacts on purple martins and other structure-nesting migratory birds, and to avoid violation of the MBTA and California Fish and Game Code Section 3503.

- Conduct building demolition and modification activities during the non-breeding season for structure-nesting migratory birds (generally September 1 through January 31). If this is not possible, the University will implement the following avoidance measures.
- Prior to the start of each phase of demolition/construction that is anticipated to occur during the migratory bird breeding season (generally February through August), the University will retain a qualified wildlife biologist to thoroughly inspect structures that would be modified or disturbed to locate remnant bird nests or areas such as drain holes or crevices that could be used as nesting areas by migratory birds such as purple martins. It is preferable to perform this survey in the non-breeding season (September 1 through January 31) so that if nests are found and are determined to be inactive, they may be removed.
- After inactive nests are removed and prior to construction that would occur between February 1 and August 31, known or potential nesting areas on or within the building structure to be modified or demolished will be covered with a suitable exclusion material that will prevent birds from nesting (i.e., 0.5- to 0.75-inch mesh netting, plastic tarp, or other suitable material safe for wildlife). Portions of the existing structures containing drain holes

or crevices that would be modified or disturbed also will be covered or filled with suitable material to prevent nesting (i.e., fiberglass insulation, foam padding, and polyvinyl chloride [PVC]/acrylonitrile butadiene styrene [ABS] caps). The University will ensure that a qualified wildlife management specialist experienced with installation of bird exclusion materials will ensure that exclusion devices are properly installed and will avoid inadvertent entrapment of migratory birds. All exclusion devices will be installed before February 1 and will be monitored throughout the breeding season (typically several times a week). The exclusion material will be anchored so that birds cannot attach their nests to the structures through gaps in a net.

- Exclusion devices for migratory birds will be installed consistent with bat exclusion measures and in a manner that does not entrap day-roosting bats.
- If exclusion material is not installed on structures prior to February 1 and migratory birds colonize a structure, removal or modification to that portion of the structure may not occur until after August 31, or until a qualified biologist has determined that the young have fledged and the nest is no longer in use.
- If surveys determine that no active bird nests are present within existing structures to be modified or demolished and appropriate steps are taken to prevent migratory birds from constructing new nests as described in the preceding measures, work can proceed at any time of the year.

Impact LRDP-BIO-4: Disturbance of structure-roosting bats

Construction activities associated with implementation of the 2020 LRDP Update that remove or modify existing building or parking structures could disturb structure-roosting bats during the maternity or hibernation period. Because structure-roosting bats often occur in large colonies, removal or disturbance of a roost site could result in the loss of many bats, which could result in a substantial decrease in the local population of native bats. Implementation of Mitigation Measure LRDP-BIO-4 would reduce this impact to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation**.

Modification or disturbance of existing building structures within the plan area could affect structure-roosting bats such as the Mexican free-tailed bat (*Tadarida brasiliensis*), little brown bat (*Myotis lucifugus*), and Yuma myotis (*Myotis yumanensis*) during the maternity season or hibernation period. Bats play important roles in California ecosystems and offer important benefits to humans, including the control of mosquitos and crop-damaging insects. Potential roosting habitat for bats in the plan area includes crevices and dark enclosed spaces within buildings, drain holes, attics, tile roofs, and other suitable crevices that provide the appropriate thermal and physical conditions for day-roosting bats. Even if an active bat roost is not directly affected (i.e., by removal of a section of a building where the roost occurs), noise generated from construction activities could be loud and create vibrations within the structure that could disturb bats during the day when they are asleep.

Construction activities could result in injury or mortality of bats if occupied roost sites are removed or disturbed at times when bats are present and are either not able to escape the roost site (e.g., early in the day, periods of cold weather) or have young. This impact would be significant. Implementation of Mitigation Measure LRDP-BIO-4 would reduce this impact to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation**.

Roosting bats were not specifically analyzed in the 2010 LRDP Final EIR and therefore this impact was not addressed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-BIO-4: Conduct pre-construction surveys for roosting bats and implement protection measures

Baseline data about how bats may use structures in the plan area, their individual numbers, or how they vary seasonally are not available. Daily and seasonal variations in habitat use by bats is common. To obtain the highest likelihood of detection, the following pre-construction bat surveys will be conducted within the construction area prior to modification or demolition of existing building structures. If surveys determine that bats are roosting in the construction area, the University will implement the following protective measures.

Conduct Pre-Construction Surveys at Structures

- Before work begins on any building or structure, qualified biologists will conduct a daytime search for bat signs and evening emergence surveys to determine whether the structure is being used as a roost. Biologists conducting daytime surveys will listen for audible bat calls and will use the naked eye, binoculars, and a high-powered spotlight to inspect crevices, drain holes, and other visible features that could house bats. Building surfaces and the ground around the structure will be surveyed for bat signs, such as guano, staining, and prey remains. Surveys will occur no earlier than two weeks prior to the construction start-date.
- Qualified biologists also will conduct evening emergence surveys at structures that contain suitable roosting areas. The surveys will consist of at least one biologist stationed near potential entry and exit points of the structure watching for emerging bats from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights at each survey location within the season that construction would be taking place. Surveys may take place over several nights to fully cover the extent of structure work. All emergence surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Survey methodology may be supplemented as new research identifies advanced survey techniques and equipment that would aid in bat detections. Acoustic detectors will be used during emergence surveys to obtain data on bat species present in the survey area at the time of detection.
- If a building or structure proposed for modification or demolition is identified as supporting an active bat roost, additional surveys may be required to determine how the structure is used by bats—whether it is used as a night roost, maternity roost, migration stopover, or for hibernation.

Identify Protective Measures for Bats Using Structures

- If it is determined that bats are using building structures within or adjacent to the construction area as roost sites, the University will coordinate with CDFW to identify protective measures to avoid and minimize impacts on roosting bats based on the type of roost and timing of activities. These measures could include the following actions.
 - If a non-maternity roost is located within a structure that would be modified or disturbed in a manner that would expose the roost, bats will be excluded from the structure by a qualified wildlife management specialist working with a bat biologist. An exclusion plan will be developed in coordination with CDFW that identifies the type of

exclusion material/devices to be used, the location and method for installing the devices, and monitoring schedule for checking the effectiveness of the devices. Exclusion devices will be installed between September 15 and October 31 to avoid affecting maternal and hibernating bat roosts and will take place during weather and temperature conditions conducive to bat activity. Because bats are expected to tolerate temporary construction noise and vibrations, bats will not be excluded from structures if no direct impacts on the roost are anticipated.

- An alternative to installing exclusion devices would be to make structural changes to a known roost proposed for removal to create conditions in the roost that are undesirable to roosting bats and encourage the bats to leave on their own (e.g., open additional portals so that the temperature, wind, light, and precipitation regime in the roost change). Structural changes to the roost will be authorized by CDFW and will be performed during the appropriate exclusion timing (listed above) to avoid harming bats.
- If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined that the roost is no longer active.

Impact LRDP-BIO-5: Conflict with a local policy or ordinance protecting biological resources, such as a tree preservation policy or ordinance

Implementation of the 2020 LRDP Update could result in the removal of heritage or specimen trees, although none were noted during the reconnaissance survey in March 2020. As a constitutionally created State entity, the University is not subject to municipal regulations, including the City of Sacramento policies and ordinances. However, the UC Davis main campus in Davis has tree protection standards, and if implementation of the 2020 LRDP Update would result in removal of heritage or specimen trees, this impact would be significant. No heritage or specimen trees were observed and Mitigation Measures LRDP-BIO-5a and LRDP-BIO-5b would ensure that heritage or specimen trees are protected. Therefore, this impact would be **less than significant with mitigation**.

The campus is developed with buildings, parking lots, roads, and landscaping. Most of the trees that meet the City of Sacramento standard for protected trees are limited to a few areas of the campus and were planted as part of landscaping projects. The campus is not subject to the City's tree preservation ordinance, which requires a permit and compensation for loss of City Trees and Private Protected Trees due to construction activities. The UC Davis main campus recognizes two categories of on-campus trees that meet standards for important trees, including heritage trees and specimen trees. Based on the tree sizes and species for heritage trees (i.e., healthy valley oak trees with trunk diameters of 33 inches or greater at a height of 24 inches from the ground), no trees observed on the Sacramento Campus meet the UC Davis criteria for protected trees, so none occur in proximity to areas where development could occur under the 2020 LRDP Update. No known documented specimen trees occur on the Sacramento Campus, which supports planted trees in urban landscaping.

Construction plans for most individual projects under the 2020 LRDP Update have not been finalized at this time, and it is not known exactly how many of these trees would be removed. The University avoids native trees whenever practical and, if removal is required, includes the planting of native trees in landscaping plans. Removal of trees would be a long-term impact, due to the length of time required for newly planted trees to reach mature size. However, because these trees are all

located in an urbanized area, the habitat in which the trees are located is not sensitive or critical as wildlife habitat. Because the loss of the trees in this urban area would not affect sensitive or critical wildlife habitat, the time span required for replacement of the habitat provided by the protected trees would not substantially affect wildlife on campus.

It is expected that if any trees qualify as protected under the UC Davis Tree Protection Standards, they could be avoided. To ensure avoidance or compensation if any heritage or specimen trees would be removed as a result of construction under the 2020 LRDP Update, Mitigation Measures LRDP-BIO-5a and LRDP-BIO-5b would reduce this impact to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation**.

The 2010 LRDP Final EIR disclosed that this impact would be significant and unavoidable, even with mitigation. Therefore, the 2020 LRDP Update would not result in a new or more severe impact.

Mitigation Measure LRDP-BIO-5a: Avoid removal of protected trees

Before a project is approved under the 2020 LRDP Update, the University will determine whether a tree that would be protected under the University's tree ordinance (i.e., Healthy valley oak trees with trunk diameters of 33 inches or greater at a height of 24 inches from the ground, or Specimen Trees: Healthy trees or stands of trees that are of high value to the campus because of their size, species, extraordinary educational and research value, and other exceptional local importance) is present on the site. If a protected tree is present within the development footprint, the University will modify project design to avoid the protected tree, if feasible.

Mitigation Measure LRDP-BIO-5b: Compensate for unavoidable loss of protected trees

If avoidance is not feasible, the University will replace the removed heritage or specimen tree with the same species as any removed specimen tree at a ratio of 3:1.



UCDAVIS

Figure 3.3-1
Open Space and Undeveloped Land on the Sacramento Campus

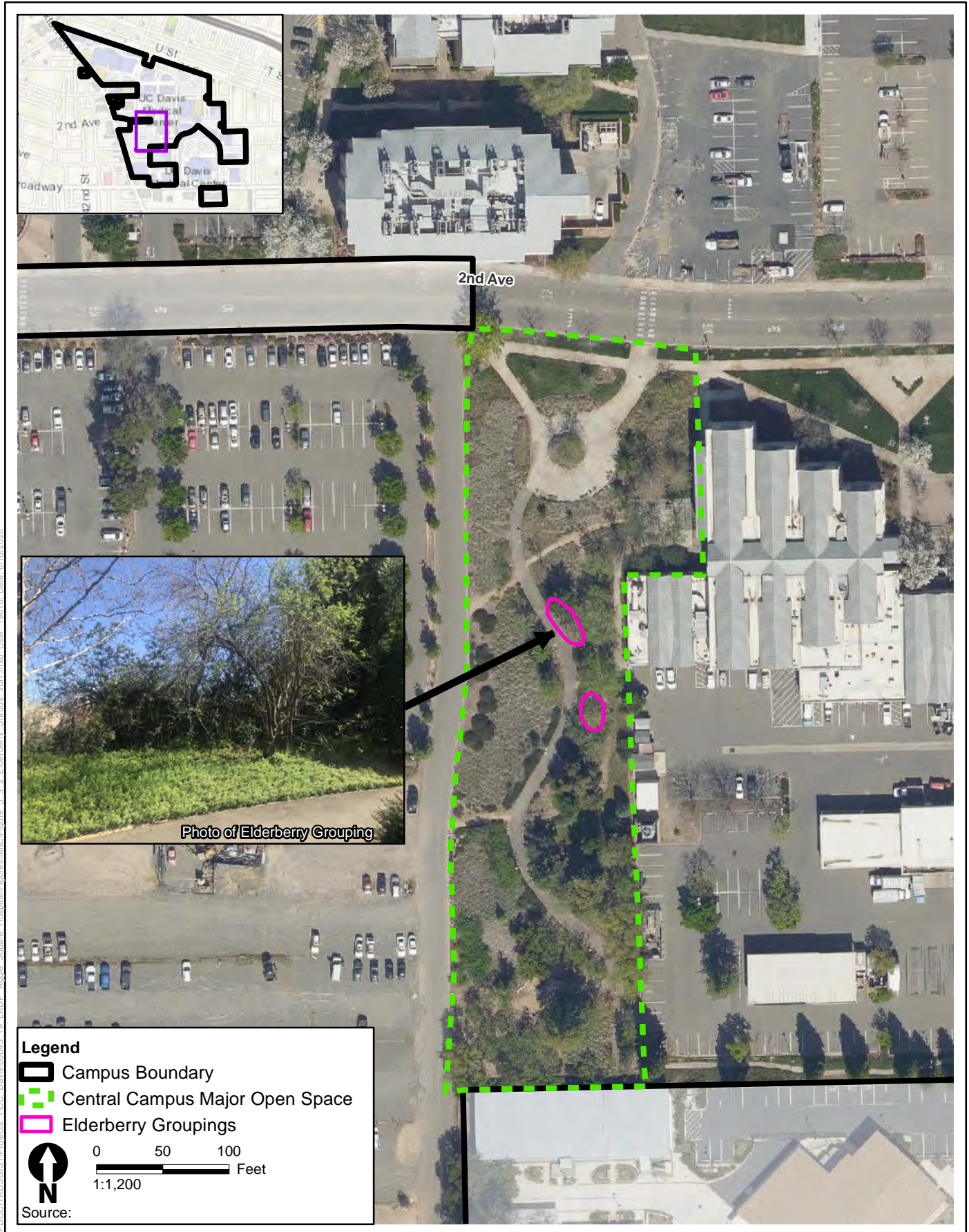


Figure 3.3-2
Elderberry Shrubs within the Central Campus Open Space

3.4 Archaeological, Historical, and Tribal Cultural Resources

This section describes the regulatory and environmental setting for archaeological, historical, and tribal cultural resources in the plan area, analyzes effects on archaeological, historical, and tribal cultural resources that would result from implementation of the 2020 LRDP Update, and provides mitigation measures to reduce the effects of any significant impacts, if applicable.

In response to the Notice of Preparation for this Supplemental EIR, commenters expressed the following concerns related to archaeological, historical, and tribal cultural resources.

- Concerns related to the former Machinery Building¹ and the Governor's Hall, which constitute the only surviving buildings from the site's previous use as the California State Fairgrounds. The commenter believes the buildings may be eligible for the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP).

3.4.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, federal, state, and regional and local regulations, laws, and policies relevant to archaeological, historical, and tribal cultural resources in the plan area.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, 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.

There are no University of California regulations specifically related to archaeological, historical, or tribal cultural resources that apply to the 2020 LRDP Update.

Federal

National Historic Preservation Act

Among those statutes enacted by Congress that affect historic properties, the National Historic Preservation Act of 1966 (NHPA) is the most significant law that addresses historic preservation. One of the most important provisions of the NHPA is the establishment of the NRHP, the official designation of historical resources. Districts, sites, buildings, structures, and objects are eligible for

¹ The former Machinery Building built in 1928 later functioned as the former State Fair Exhibition Hall and will be referred to throughout this document as Exhibition Hall. The building is currently the UC Davis Institute for Regenerative Cures.

listing in the NRHP. Nominations are listed if they are significant in American history, architecture, archeology, engineering, and culture. The NRHP is administered by the National Park Service. The NRHP is the nation's master inventory of known historic resources. It includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, and cultural value.

The formal criteria (36 Code of Federal Regulations [CFR] Section 60.4) for determining NRHP eligibility are as follows.

1. The property is at least 50 years old (however, properties under 50 years of age that are of exceptional importance or are contributors to a district can also be included in the NRHP);
2. It retains integrity of location, design, setting, materials, workmanship, feeling, and associations; and
3. It possesses at least one of the following characteristics:
 - a. Association with events that have made a significant contribution to the broad patterns of history (events).
 - b. Association with the lives of persons significant in the past (persons).
 - c. Distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant, distinguishable entity whose components may lack individual distinction (architecture).
 - d. Has yielded, or may be likely to yield, information important to prehistory or history (information potential).

A project is considered to have a significant impact when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. These seven aspects of integrity are described as follows.

- **Location.** Integrity of location refers to whether a property remains where it was originally constructed or was relocated.
- **Design.** Integrity of design refers to whether a property has maintained its original configuration of elements and style that characterize its plan, massing, and structure. Changes made after original construction can acquire significance in their own right.
- **Setting.** Integrity of setting refers to the physical environment surrounding a property that informs the characterization of the place.
- **Materials.** Integrity of materials refers to the physical components of a property, their arrangement or pattern, and their authentic expression of a particular time period.
- **Workmanship.** Integrity of workmanship refers to whether the physical elements of a structure express the original craftsmanship, technology and aesthetic principles of a particular people, place or culture at a particular time period.
- **Feeling.** Integrity of feeling refers to the property's ability to convey the historical sense of a particular time period.
- **Association.** Integrity of association refers to the property's significance defined by a connection to a particular important event, person or design.

Listing in the NRHP does not ascribe specific protection or assistance for a property but it does afford recognition in planning for federal or federally assisted projects, eligibility for federal tax

benefits, and qualification for federal historic preservation assistance. Additionally, project effects on properties listed in the NRHP must be evaluated under the California Environmental Quality Act (CEQA).

Section 106 of the National Historic Preservation Act

Federal protection of cultural resources is legislated by (a) the NHPA of 1966 as amended by 16 United States Code 470, (b) the Archaeological Resource Protection Act of 1979, and (c) the Advisory Council on Historical Preservation. Section 106 of the NHPA and accompanying regulations (36 CFR Part 800) constitute the main federal regulatory framework guiding cultural resources investigations and require consideration of effects on properties that are listed in, or may be eligible for listing in the NRHP. These laws and organizations maintain processes for determination of the effects on historical properties eligible for listing in the NRHP. For UC Davis, listing on the NRHP and compliance with Section 106 is relevant to future projects requiring federal permitting.

Secretary of the Interior's Standards

The Secretary of the Interior's Standards for the Treatment of Historic Properties (Secretary's Standards), codified in 36 CFR Part 67, provide guidance for working with historic properties. The Secretary's Standards are used by lead agencies to evaluate proposed rehabilitative work on historic properties. The Secretary's Standards are a useful analytic tool for understanding and describing the potential impacts of proposed changes to historic resources. Projects that comply with the Secretary's Standards benefit from a regulatory presumption under CEQA that they would not result in a significant impact to a historic resource. Projects that do not comply with the Secretary's Standards may or may not cause a substantial adverse change in the significance of a historic property.

In 1992, the Secretary's Standards were revised so they could be applied to all types of historic resources, including landscapes. They were reduced to four sets of treatments to guide work on historic properties: Preservation, Rehabilitation, Restoration, and Reconstruction. The four distinct treatments are defined as follows.

- Preservation focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.
- Rehabilitation acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- Restoration depicts a property at a particular period of time in its history, while removing evidence of other periods.
- Reconstruction re-creates vanished or non-surviving portions of a property for interpretive purposes.

The Guidelines for the Treatment of Historic Properties

The *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings* (Guidelines) illustrate how to apply the four treatment standards (Preservation, Rehabilitation, Restoration, and Reconstruction) to historic properties in a way that meets the Secretary's Standards and are advisory, not regulatory (U.S. Department of the Interior, National Park Service 2017). The purpose of the Guidelines is to provide guidance to historic building owners and building managers,

preservation consultants, architects, contractors, and project reviewers prior to beginning work. They address both exterior and interior work on historic buildings. There are four sections, each focusing on one of the four treatment standards. Each section includes one set of standards with accompanying Guidelines that are to be used throughout the course of a project.

State

California Register of Historic Resources

All properties listed in or formally determined eligible for listing in the NRHP are eligible for the CRHR. The CRHR is a listing of State of California resources that are significant within the context of California's history. The CRHR is a statewide program of similar scope and with similar criteria for inclusion as those used for the NRHP. In addition, properties designated under municipal or county ordinances are also eligible for listing in the CRHR.

A historic resource must be significant at the local, state, or national level under one or more of the criteria defined in the California Code of Regulations (CCR) Title 15, Chapter 11.5, Section 4850. The CRHR criteria are similar to the NRHP criteria and are tied to CEQA because any resource that meets the criteria below is considered a historical resource under CEQA. As noted above, all resources listed in or formally determined eligible for the NRHP are automatically listed in the CRHR.

The CRHR uses four evaluation criteria for listing eligibility of a resource to the CRHR.

1. Is associated with events or patterns of 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.
2. Is associated with the lives of persons important to local, California, or national history.
3. 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.
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Similar to the NRHP, a resource must meet one of the above criteria and retain integrity. The CRHR uses the same seven aspects of integrity as the NRHP (location, design, setting, materials, workmanship, feeling, and association).

California Environmental Quality Act

CEQA requires public agencies to consider the effects of their actions on both "historical resources" and "unique archaeological resources." Pursuant to Public Resources Code (PRC) Section 21084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." Section 21083.2 requires agencies to determine whether proposed projects would have effects on unique archaeological resources.

Historical Resources

Historical resource is a term with a defined statutory meaning (PRC, Section 21084.1; determining significant impacts on historical and archaeological resources is described in the State CEQA Guidelines, Sections 15064.5[a] and [b]). Under State CEQA Guidelines Section 15064.5(a), historical resources include the following.

- 1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Public Resources Code, Section 5024.1).
- 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), will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- 3) Any object, building, structure, site, area, place, record, or manuscript which 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 may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be historically significant if the resource meets the criteria for listing in the California Register of Historical Resources (Public Resources Code, Section 5024.1), including the following:
 - a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
 - b) Is associated with the lives of persons important in our past;
 - c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
 - d) Has yielded, or may be likely to yield, information important in prehistory or history.
- 4) The fact that a resource is not listed in or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to PRC Section 5020.1(k)), or identified in a historical resources survey (meeting the criteria in PRC Section 5024.1(g)) does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC Section 5020.1(j) or 5024.1.

Unique Archaeological Resources

CEQA also requires lead agencies to consider whether projects will impact unique archaeological resources. PRC Section 21083.2, subdivision (g), states that unique archaeological resource means 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.

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Tribal Cultural Resources

Assembly Bill (AB) 52, signed by the California Governor in September of 2014, added several sections to the PRC establishing a new class of resources under CEQA and a new category in the CEQA Appendix G environmental checklist: "tribal cultural resources." AB 52 requires that lead agencies undertaking CEQA review must, upon written request of a California Native American tribe,

begin consultation once the lead agency determines that the application for the project is complete, prior to the issuance of a notice of preparation of an environmental impact report or notice of intent to adopt a negative declaration or mitigated negative declaration.

PRC Section 21074 states the following.

- a) “Tribal cultural resources” are either of the following:
 - 1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
 - A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
 - B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
 - 2) 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
- b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
- c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a “nonunique archaeological resource” as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

Declining consultation under AB 52 does not limit a tribe’s option to consult on a project under other CEQA or federal cultural resources laws or limit protective measures to be taken under those other laws. Furthermore, tribes and individuals may still submit comments on the environmental document during the public circulation period even if a tribe chose not to consult under AB 52.

Public Resources Code Section 5024 and 5024.5

The California State Legislature enacted PRC Sections 5024 and 5024.5 as part of a larger effort to establish a state program to preserve historical resources. These sections of the code require state agencies to take a number of actions to ensure preservation of state-owned historical resources under their jurisdictions. These actions include evaluating resources for NRHP eligibility and California Historical Landmark eligibility, maintaining an inventory of eligible and listed resources, and managing these historical resources so that they will retain their historic characteristics.

PRC Section 5024(f) requires state agencies to submit to the State Historic Preservation Officer for comment documentation for any project having the potential to affect historical resources under its jurisdiction that are listed in or potentially eligible for inclusion in the NRHP, or are registered or eligible for registration as California Historical Landmarks. The State Historic Preservation Officer has 30 days after receipt of the notice for review and comment.

Health and Safety Code, Section 7050.5

Section 7050.5 (b) of the California Health and Safety Code specifies protocol when human remains are discovered. The code states the following.

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in PRC Section 5097.98.

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural and Sacred Sites Act applies to both state and private lands. The act requires that upon discovery of human remains, that construction or excavation activity cease and that the county coroner be notified. If the remains are of a Native American, the coroner must notify the Native American Heritage Commission (NAHC). The NAHC then notifies those persons most likely to be descended from the Native American's remains. The Act stipulates the procedures the descendants may follow for treating or disposing of the remains and associated grave goods. The descendants may, with the permission of private landowners, inspect the site and recommend to the owner or the person responsible for the excavation means for treating or disposing of the remains and associated grave goods. The descendants must complete their inspection and make recommendations within 24 hours of their notification by the NAHC. The recommendation may include scientific removal and non-destructive analysis.

Public Resource Code, Section 5097.5

PRC Section 5097.5 specifies the procedures to be followed in the event of the unexpected discovery of human remains on nonfederal land. The disposition of Native American burial falls within the jurisdiction of the NAHC. Section 5097.5 of the PRC states the following.

No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

Regional and Local

Sacramento Preservation Ordinance

The Sacramento Historic Preservation Ordinance is an enacted regulation enforced by the Community Development Department (City Municipal Code Chapter 17.604). The ordinance establishes a City preservation program, commission, and staff and provides mechanisms to identify and protect historic and cultural resources. It provides standards, criteria, and processes consistent with state and federal preservation standards and criteria. It also establishes the Sacramento Register of Historic and Cultural Resources, which is on file with the City Clerk.

City of Sacramento 2035 General Plan

Relevant goals and policies pertaining to cultural and historic resources are listed in the Citywide Historic and Cultural Preservation element of the *City of Sacramento 2035 General Plan* (City of Sacramento 2015).

Policies:

HCR-2.1.1. Identification. The City shall identify historic and cultural resources, including individual properties, districts, and sites (e.g., archaeological sites), to ensure adequate protection of these resources.

HCR-2.1.6. Planning. The City shall take historical and cultural resources into consideration in the development of planning studies and documents.

HCR-2.1.16. Archaeological and Cultural Resources. The City shall develop or ensure compliance with protocols that protect or mitigate impacts to archaeological and cultural resources including prehistoric resources. (City of Sacramento 2015)

3.4.2 Environmental Setting

This section identifies all pertinent changes to the environmental setting relevant to archaeological, historical, and tribal cultural resources in the 2020 LRDP Update plan area.

The 2020 LRDP Update expands on pertinent plan area themes not included in the 2010 LRDP Final EIR, providing additional background on the establishment of the Sacramento County Hospital and the original California State Fairgrounds. The 2020 LRDP Update also expands on the ethnographic setting to include information on the Nisenan tribe.

Ethnography

Nisenan

The 2020 LRDP Update and the Sacramento Campus is located within the lands occupied and used by the Nisenan, or Southern Maidu. The language of the Nisenan, which includes several dialects, is classified in the Maiduan family of the Penutian linguistic stock (Kroeber 1925; Shipley 1978). The western boundary of Nisenan territory was the western bank of the Sacramento River. The eastern boundary was “the line in the Sierra Nevada mountains where the snow lay on the ground all winter” (Kroeber 1929).

Nisenan settlement locations depended primarily on elevation, exposure, and proximity to water and other resources. Permanent villages usually were located on low rises along major watercourses. Village size ranged from three houses to 40 or 50. Houses were domed structures covered with earth and tule or grass and measured 3.0–4.6 meters (9.8–15 feet) in diameter. Brush shelters were used in summer and at temporary camps during food-gathering rounds. Larger villages often had semi-subterranean dance houses that were covered in earth and tule or brush, with a central smoke hole at the top and an east-facing entrance. Another common village structure was a granary used for storing acorns (Wilson and Towne 1978).

The Nisenan occupied permanent settlements from which specific task groups set out to harvest the seasonal bounty of flora and fauna that the rich valley environment provided. The Valley Nisenan economy involved riparian resources—in contrast to the Hill Nisenan, whose resource base consisted primarily of acorn and game procurement. The only domestic plant was native tobacco

(*Nicotiana* sp.), but many wild species were closely husbanded. The acorn crop from the blue oak (*Quercus douglasii*) and black oak (*Q. kelloggii*) was so carefully managed that this activity served as the equivalent of agriculture. Acorns could be stored in anticipation of winter shortfalls in resource abundance. Deer, rabbit, and salmon were the chief sources of animal protein in the aboriginal diet, but many other insect and animal species were taken when available.

Religion played an important role in Nisenan life. The Nisenan believe that all natural objects were endowed with supernatural powers. Two kinds of shamans existed: curing shamans and religious shamans. Curing shamans had limited contact with the spirit world and diagnosed and healed illnesses. Religious shamans gained control over the spirits through dreams and esoteric experiences (Wilson and Towne 1978).

As with other California Native American groups, the gold rush of 1849 had a devastating effect on the Valley Nisenan. The flood of miners that came to the area in search of gold brought diseases with them that decimated the Nisenan population. Those who survived were subjected to violence and prejudice at the hands of the miners, and the Nisenan eventually were pushed out of their ancestral territory. Although this contact with settlers had a profound negative impact on the Nisenan population through disease and violent actions, the Nisenan people survived and maintained strong communities and action-oriented organizations.

Regional History

The city of Sacramento sits in the Sacramento Valley, the northern region of the Great Central Valley of California. The Sacramento Valley has the Sierra Nevada on its eastern border, the California Coast Ranges on the western border, and the Siskiyou Mountains to the north. Sacramento sits at the confluence of the Sacramento River and the American River and consists of flat topography with an average elevation of 25 feet above sea level. Sacramento is California's seventh most populated city and forms the core cultural and economic hub of a four-county metropolitan area.

The UC Davis Sacramento Campus occupies property along Stockton Boulevard at V Street and Broadway, some 2.5 miles southeast of downtown Sacramento and 17 miles east of the UC Davis Main Campus in Davis. The campus is surrounded by residential and commercial properties in an urbanized area of Sacramento. Stockton Boulevard serves as a major urban corridor with numerous office buildings and a few retail businesses. North of V Street, the Elmhurst neighborhood forms a residential center with numerous single-family homes. The North Oak Park neighborhood sits to the west of the hospital, and the Fairgrounds neighborhood sits at the southwest of the campus (JRP Historical Consulting Services 2002:12–14).

Development of American Hospitals

Early hospitals in the United States served as almshouses and jails for indigent individuals rather than centers for medical care. Over time this reputation shifted to one where hospitals reflected 'citadels of science and bureaucratic order.' Early hospitals relied on public funding and accepted everyone into their makeshift centers, often any available building at the time, where care adapted to suit the space rather than the other way around. This often led to dirty, overcrowded, and poorly ventilated treatment spaces catered specifically to lower-income individuals and foreigners. The overall effect resulted in these hospitals operating more as substitute houses for those without one, or a place where people went to die. Middle class or wealthy citizens almost never frequented such centers, instead seeking the expertise of private doctors. After 1840, hospitals moved to become the epicenter of medical practice with advancements in surgical practice, anesthesia, and sterilization

procedures. A variety of public and privately funded institutions arose, specializing in the treatment of different segments of the population. County hospitals often adopted a “ward plan” that proved easier to construct and favorable to sanitation and care procedures. Long-term care and convalescent homes formed add-on components to the open space plans as needed as beds for more acutely ill patients rose in demand. “Big block” vertical hospitals began replacing the “ward plan” as specialized care and advances in the understanding of bacteria and antiseptic wound treatments grew into the early twentieth century and construction capabilities allowed for taller, more stable buildings (JRP Historical Consulting Services 2002:12–14).

California County System of Hospitals

Since 1855, most counties oversaw responsibility for health care for the poor, where interpretation of Section 17000 of the State Welfare and Institutions Code translated to a mandatory duty for providing both financial and medical relief for the state’s disadvantaged communities. Counties, however, could opt to pay a private institution to fulfill these legal duties. In California, many counties chose to simply operate their own general hospitals. California remains one of the few states to construct a network of well-developed county hospitals. These institutions catered specifically to the poor and those unable to pay for services outright whereas middle class patients capable of paying for care often referred to private doctors and hospitals for treatment. This was upheld in court in 1933, where a group of Bakersfield doctors sued to stop Kern County General Hospital from admitting patients capable of paying for services. The decision ensured private and tax-advantaged public hospitals would not compete with private institutions for business (JRP Historical Consulting Services 2002:15).

The Great Depression laid bare how public institutions often relied on property taxes to fund their operations, a practice that failed many hospitals with the widespread economic crisis. While private insurance companies provided coverage for patients attending private institutions, no such funding arose for public hospitals. After 1966, when California enacted a state-level program, Medi-Cal, to complement the federal-level Medicare program that supported the elderly, county hospitals had to pay an annual lump-sum payment to the state in support of Medi-Cal. Patients who qualified for Medi-Cal seen at county hospitals required transfer to private institutions to free space for those unable to qualify for Medi-Cal. Due to changing political philosophies after the election of Ronald Reagan to the governorship, state support for county-operated hospitals under the “county plan,” whereby the state would cover all costs incurred above and beyond the base 1965 rate of the Medi-Cal law and patients could opt-in for care in county hospitals, eroded. Many county institutions closed, became privatized, contracted out, or transformed into medical schools for educational purposes. Sacramento County Hospital chose to ally with the nearby university medical school at UC Davis (JRP Historical Consulting Services 2002:15–16).

Establishment of Sacramento County Hospital (1852; consolidation 1876)

Fraternal organizations formed the earliest hospitals in Sacramento, starting with the Odd Fellows in 1850 and a group of doctors operating at Sutter’s Fort Hospital. Charitable organizations also facilitated a growth in local medical care, particularly catering to the needs of children, the mentally ill, and senior populations. The first public hospital occupied a space near the business district of the town as population grew and with it a concurrently growing medical need. The Gold Rush transformed Sacramento into a mining town hub and a place to receive medical care. The County continued to see a sustained, increasing need for medical services and later purchased sixty acres of property for a larger facility. Around 1852 the first Sacramento County hospital occupied multiple

locations across the city. The first consolidated County Hospital building occupied 22 acres adjoining Stockton Boulevard and dates to 1871, with building designs by A. Bennett and a total cost of \$80,000. This original building burned down in 1878 with its replacement, a ward-style plan with five wings radiating from a central administration building, designed by Nathaniel D. Goodell at the request of the Sacramento County Board of Supervisors. “Ward plan” hospitals often included an open plan layout with only a handful of private rooms with ample sunshine and ventilation entering through multiple rows of windows on opposite elevations of the building and grouping of different illnesses in self-contained service units. Reflecting the times, the hospital also continued to serve the disadvantaged communities who could not pay for private care, particularly foreign residents, poorer laborers and, at times, ill soldiers. This building operated until 1908, when questionable sanitation practices and overcrowding necessitated a reevaluation of the building’s capabilities. The next expression of the hospital incorporated a formal allée approach to the administration building with 10 separate wards connected through open porches or underground passageways. This design emerged from the work of Rudolph A. Herold and resulted in demolition of many of Goodell’s original buildings. This iteration of the complex dates to 1928, 2 years after Herold’s death, with an additional annex, the Camellia Cottage (designed by Harry J. Devine) for aged women, receiving funding in 1934. The Camellia Cottage represents a transformation in the perception of elder care, focusing more on a home-like atmosphere catering to the needs of its residents at a time when most women relied on their families for support, only accepting public assistance when desperate (Sacramento Bee 1900:8; University of California, Davis 2010a:16–18; JRP Historical Consulting Services 2002:13, 17–25).

The next expansion of the hospital facilities dates to 1950. This mid-twentieth century addition, designed by architect George C. Sellon, raised the height of the building to six stories and increased the total interior space to 140,000 square feet. This addition also altered Herold’s original façade and reflected modern tastes. A new tower arose in 1964 east of the main hospital building. Standing eight stories and designed by Starks, Jozens, and Nacht, it added 120,000 square feet of space to the existing complex. A 34,000 square foot addition east of the tower served as kitchen and laundry facilities. By 1964, all of Herold’s original exterior design work became hidden by additions and alterations (JRP Historical Consulting Services 2002:22).

The Sacramento County Hospital’s affiliation with the University of California dates to 1966, with the State of California founding the UC Davis School of Medicine in 1965. With the development of Medi-Cal and Medicare came a subsequent agreement for UC Davis’s medical campus to utilize the hospital as its primary educational facility, which replaced a proposed on-campus medical center, scrapped when the 1970 Health Sciences bond failed to pass. Operational and fiscal responsibility and ownership of the facility changed to UC Davis in 1972, with full ownership secured by 1978 with the renaming of the facility to the UC Davis Medical Center (JRP Historical Consulting Services 2002:22–23; University of California, Davis 2010b, San Francisco 2010a:18).

An eight-story tower addition, designed by Anshen & Allen, as well as a second story to the kitchen and laundry facility came in 1982. The south wing of the campus received a Magnetic Resonance Imaging (MRI) facility as well as an Ambulatory Surgery Unit in the 1980s and additional emergency and operating facilities to the north and northeast sections of the complex were built in the 1990s. By 1989 UC Davis Medical Center operated some 59 separate buildings. 1999 saw the addition of a 14-story tower on the east portion of the campus near the laundry/kitchen addition, which added another 454,000 square feet of usable space. The overall nature of the original Sacramento County Hospital has changed dramatically over time with only a few of the older buildings remaining. The campus occupies 146 acres with more than two dozen buildings and facilities totaling 3.4 million

gross square feet. All the UC Davis School of Medicine teaching activities now operate at the UC Davis Medical Center Sacramento Campus; research is the primary activity at the UC Davis Main Campus facilities (JRP Historical Consulting Services 2002:23; BMS Design Group, San Francisco 2010b:14).

Rudolph A. Herold (1870–1926)

Born in San Francisco on December 26, 1870, Rudolph A. Herold studied architecture in Europe for three years. His professional career began, developed, and ended in Sacramento. Herold designed several civic buildings in the downtown area, including the City Hall (1908), the County Court House (1912, demolished 1970s), the County Jail (demolished), the old Sacramento High School and the Sacramento County Hospital. Commercial buildings designed by Herold include the Capitol National Bank, the Masonic Temple. Herold designed other hospital buildings beyond Sacramento, including the Weimar Joint Sanitarium in Placer County. Herold's late-career notable commission dates to 1926: the six-story Providence Hospital and Nurses' Home in Oakland. Herold died on April 14, 1926 at the age of 55 (JRP Historical Consulting Services 2002:19–20; Find a Grave Index 2015).

Original State Fairgrounds

The UC Davis Medical Center now sits on several parcels that were the former California State Fairgrounds, which occupied much of the site from 1909 (when it first hosted the State Fair) until 1968, when it moved to the present site of Cal Expo north of the American River. Organizers of the California State Fair aimed “to educate the public about agriculture and industry in California.” In August 1911, the California State Fair hosted the first Women's Day, spearheaded by notable leader of the College Equal Suffrage League of Northern California, Lillian Cash Hough. By October 1911, California hosted a special election that resulted in its becoming the sixth state to grant women the right to vote. In 1939, organizers could expect upwards of 500,000 visitors during a 10-day run of the fair. During World War I, the United States Army utilized the open areas for a temporary camp. The Army used the grounds for camps also during World War II, and the fair did not operate from 1942 to 1946. The decades between the 1950s through its relocation to Cal Expo in 1968 are seen as the golden age of the California State Fair, during which the fair hosted a variety of highly popular events at Broadway and Stockton Boulevard in addition to its agricultural programs, particularly ballooning, horse racing, and cultural exhibitions. Extant buildings include the Governor's Hall and the Exhibition Hall (originally known as the Machinery Building and currently functions as the Institute for Regenerative Cures) (BMS Design Group, San Francisco 2010a:18; Hendricks 2010:8, 31–35, 51, 53–54).

Known Cultural Resources

Archaeological Resources

On April 14, 2020, a records search was conducted at the California Historic Resources Information System North Central Information Center located at California State University, Sacramento. The records search included previous cultural resources studies conducted within the plan area, as well as previously recorded cultural resources in the plan area. On April 6, 2020, a request was sent to the Native American Heritage Commission for a search of their Sacred Lands database. No response has been received to date. A records search showed that there were no known recorded archaeological resources associated with the Sacramento Campus site and the potential for Native American sites, including Native American burial sites, is low.

In 2004, during excavation for the addition of a radiation oncology lab in the Cancer Center, workers discovered a human cranial bone fragment and several other bones. Ground-disturbing activities were halted and the county coroner was notified of the discovery. The human remains were found in what was determined to be part of a long-forgotten burial ground at the former Sacramento County Hospital that was in use between 1891 and 1927. The Burial Ground Excavation conducted by Pacific Legacy archaeologists identified 78 burials in the plan area. Three burials consisted of casket remnants and three others were isolated bone fragments. The excavation was limited to the area comprising the footprint of the planned radiation oncology lab and, therefore, only established the location of a portion of the burial ground. The human remains and associated artifacts were transported to Pacific Legacy's lab and examined for data. After the lab work, all recovered human remains and associated artifacts were placed in caskets and were placed in a single mass grave at the St. Mary's Cemetery and Mausoleum in Sacramento.

Built Environment Resources

Table 3.4-1 lists all built environment architectural resources within the plan area that are currently 50 years of age or older or will reach the 50-year threshold by 2040 (i.e., constructed in or before 1990). The table also indicates the historic designation status, if applicable, for each building or structure.

Table 3.4-1. Built Environment Architectural Resources within the LRDP Plan Area That Are Currently 50 Years of Age or Older or Will Reach the 50-Year Threshold by 2040

Building Name (original)	Building Name (current)	Year Constructed	Year Building Will Reach 50 Years of Age	Status (eligible, not eligible, or unevaluated)
Exhibition Hall	Institute for Regenerative Cures	1928	Already 50+	Assumed eligible for listing in the NRHP and CEQA Historical Resource
Governor's Hall	Same	1938	Already 50+	Assumed eligible for listing in the NRHP and CEQA Historical Resource
House Staff Facility Building	Same	1916	NA	Not eligible
Primary Care Facility	Cypress Building	1954	Already 50+	Unevaluated
Pathology Support Building	Pathology Administration Teaching & History	1968	Already 50+	Unevaluated
Warehouse	Same	Ca. 1940	Already 50+	Unevaluated
University Tower	Main Hospital	1982	2032	Unevaluated
Administrative Support Building	Same	1987	2037	Unevaluated
Parking Structure 1	Same	1990	2040	Unevaluated
Trauma Nursing Unit	Main Hospital	1990	2040	Unevaluated

NA = not applicable; NRHP = National Register of Historic Places; CEQA = California Environmental Quality Act.

One building, the House Staff building, was evaluated as part of a seismic study and was determined to be not eligible for listing in the CRHR (JRP Historical Consulting 2014). Five buildings in the plan area are currently older than 50 years and have not been formally evaluated to determine their status as CEQA historical resources. Two of those buildings, Exhibition Hall and Governor's Hall, are presumed to be historically significant at the local level and are of high interest to the local historic preservation community. Therefore, for the purposes of this project, it is assumed that both the Exhibition Hall and Governor's Hall buildings are eligible for listing in the CRHR and the NRHP at the local level for their direct association with the former state fairgrounds. Therefore, both buildings are assumed to be CEQA Historical Resources. A field visit was conducted to verify the existence and condition of buildings and structures 50 years of age or older on March 14, 2020. There have been no perceptible exterior changes or renovations to these building since the 2010 LRDP.

Another four buildings will reach 50 years of age within the implementation period of the 2020 LRDP Update. The University Tower was constructed in 1982 and will reach 50 years of age in 2032. The Administrative Support Building was constructed in 1987 and will reach 50 years of age in 2037. Parking structure 1 and the Trauma Nursing Unit were both constructed in 1990 and will reach 50 years of age in 2040. If projects are proposed as part of implementation of the 2020 LRDP Update that would affect a building or structure that has reached the 50 year threshold for eligibility consideration within the 2020 LRDP Update timeframe, the building or structure would require evaluation by a qualified architectural historian.

Tribal Cultural Resources

The process for complying with AB 52 requires actions by both tribes and lead agencies and is separate from consultation procedures under other cultural resources laws. AB 52 instructs tribes to submit written requests to lead agencies to be formally notified of projects proposed in the geographic area with which the tribe is traditionally and culturally affiliated. Lead agencies that receive such requests must formally notify the concerned tribes of a project within 14 days of determining that an application for a project is complete or of a decision to undertake a project. The tribes so notified must respond in writing within 30 days of receiving the notice with a request to consult or decline consultation under AB 52. If consultation is requested, the lead agency must initiate the consultation process within 30 days of receiving the request, and prior to the release of an environmental document (negative declaration, mitigated negative declaration, or environmental impact report). Consultation is concluded when either (1) the parties agree to mitigate or avoid a significant effect on a tribal cultural resource, if such an effect is identified, or (2) a party, acting on good faith and after reasonable effort, concludes that a mutual agreement cannot be reached (PRC Section 20180.3.2, subdivision (b)).

Impacts on tribal cultural resources are assessed based on the results of consultations conducted pursuant to the AB 52 process. UC Davis has not received a request for notification of projects in Sacramento County from any of the local tribes. Accordingly, UC Davis is not required to issue invitations to consult under AB 52 and no AB 52 consultations with any tribe have occurred.

3.4.3 Environmental Impacts

This section describes the environmental impacts associated with archaeological, historical, and tribal cultural resources that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e.,

avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

This analysis identifies the potential impacts of implementation of the 2020 LRDP Update on archaeological, historical, and tribal cultural resources in the plan area. The impact analysis considers the known archaeological, historical, and tribal cultural resource environmental setting in the plan area, as well as the potential for previously undocumented resources, including human remains, and physical effects (i.e., disturbance, material alteration, demolition) to known and previously undocumented cultural resources that could result from implementation of the 2020 LRDP Update. The analysis is also informed by the provisions and requirements of federal, state, and local laws and regulations that apply to cultural resources.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- A substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
- A substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
- Disturbance of any human remains, including those interred outside of formal cemeteries.
- Potential to cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC 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 listed or eligible for listing in the CRHR or in a local register of historical resources as defined in PRC Section 5020.1(k).
- Potential to cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC 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 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 PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Impacts and Mitigation Measures

Impact LRDP-CUL-1: Potential to cause a substantial adverse change in the significance of a historical resource

Implementation of the 2020 LRDP Update could result in damage or renovations to existing structures that are significant historical resources or to their settings. Identified projects in the 2020 LRDP Update include substantial renovations to the Governor's Hall, which is over 50 years old and is assumed to meet the criteria for listing in the NRHP and CRHR. The University is committed to making these changes to Governor's Hall in compliance with the Secretary of Interior's standards, as indicated in Mitigation Measure LRDP-CUL-1a. However, renovation or demolition of other structures may be necessary. If changes are proposed to a building or structure that is a historic property, those changes could diminish the historic integrity of the building, even with implementation of Mitigation Measures LRDP-CUL-1b and LRDP-CUL-1c. Therefore, impacts on historical resources would be **significant and unavoidable**.

The 2020 LRDP Update proposes general types of campus development to support projected campus population growth and to enable expanded and new program initiatives, including the renovation of some existing buildings. There are currently two buildings on the campus, both associated with the State Fairgrounds, that are assumed to meet eligibility criteria for listing in state and federal registers: Exhibition Hall and Governor's Hall. Three other building over 50 years old have not been evaluated for eligibility for listing in state or federal registers: the Primary Care Facility, the Pathology Support building, and the warehouse. Four additional structures will reach 50 years of age within the implementation period of the 2020 LRDP Update: the University Tower, the Administrative Support Building, Parking Structure 1, and the Trauma Nursing Unit.

The 2020 LRDP Update includes renovations to the Governor's Hall, which is considered a historical resource for the purposes of this analysis, including an addition of 5,000 square feet. This could affect the historic integrity of the building, and the impact could be **significant**. However, as discussed in Mitigation Measure CUL-1a, the University is committed to making these renovations in compliance with the Secretary of Interior's standards for the treatment of historic properties. This would ensure this impact is **less than significant with mitigation**.

The Primary Care Facility, the Pathology Support building, and the warehouse are 50 years of age. The University Tower was constructed in 1982 and will reach 50 years of age in 2032. The Administrative Support Building was constructed in 1987 and will reach 50 years of age in 2037. Parking Structure 1 and the Trauma Nursing Unit were both constructed in 1990 and will reach 50 years of age in 2040. Some of these buildings could meet the criteria for significance as CEQA historical resources. If these structures were historical resources, and projects were proposed that would result in alteration or demolition of these structures, or would result in alterations to the settings of these structures that would affect their significance, the impact would be **significant**.

Implementation of Mitigation Measure LRDP-CUL-1b would require that buildings 50 years of age or older be evaluated prior to development that may affect them. Implementation of Mitigation Measure LRDP-CUL-1c would reduce significant impacts potentially historical resources that have not been formally evaluated or have not yet reached 50 year of age, because actions would be taken to record, evaluate, avoid, or otherwise treat the resource appropriately, in accordance with pertinent laws and regulations. While it is possible to complete modifications or renovations consistent with the Secretary's Standards, resulting in a less-than-significant impact, it is possible

that this could not be achieved or that a structure would need to be demolished. Additionally, CEQA Guidelines (CCR Section 15126.4[b][2]) note that in some circumstances, documentation of a historical resource will not mitigate the effects of demolition of that resource to a less-than-significant level because the historical resource would no longer exist. Therefore, the project's impacts would remain **significant and unavoidable**.

The 2010 LRDP Final EIR conservatively concluded that impacts on historical resources were significant and unavoidable, even with implementation of Mitigation Measures CUL-1b and CUL-1c. Therefore, implementation of the 2020 LRDP Update would not result in a new or more severe impact than disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-CUL-1a: Prepare Historic Structure Report, adhere to Secretary of the Interior's Standards for the Treatment of Historic Properties, the California State Historic Building Code, and Relevant National Park Service Preservations Briefs

Prior to renovating the Governor's Hall building, the University will retain a qualified historic preservation planner to prepare a historic structure report (HSR) for the building in accordance with National Park Service (NPS) Preservation Brief 43 (The Preparation and Use of Historic Structure Reports) and include mitigation measures in conformance with the Secretary of the Interior's Standards (SOIS) for the Treatment of Historic Properties or the California State Historic Building Code (CHBC). The HSR shall identify historic preservation objectives and requirements for the treatments and use of the building prior to initiation of renovations to ensure that the historical significance and condition of the building are considered in the development of proposed renovation work.

The University will ensure that preservation treatment objectives outlined in the HSR for the Governor's Hall building seek to meet all SOIS for character-defining features designated in the HSR as having primary significance status, and meet as many SOIS as feasible for those character-defining features designated as having secondary significance status. In instances when the university must address human safety issues not compatible with the SOIS, the university will adhere to the CHBC to the extent feasible. The CHBC is defined in Sections 18950–18961 of Division 13, Part 2.7 of Health and Safety Code and is a mechanism that provides alternative building regulations for permitting repairs, alterations and additions to historic buildings and structures. These standards and regulations are intended to facilitate the rehabilitation and preservation of historic buildings. The CHBC proposes reasonable alternatives so that a property's fire protection, means of egress, accessibility, structural requirements, and methods of construction would not need to be modernized in a manner that compromises historic integrity. The CHBC is intended to allow continued, safe occupancy while protecting the historic fabric and character-defining features that give a property historic significance, thus promoting adherence to the SOIS. The CHBC recognizes that efforts to preserve the historic materials, features, and overall character of a historical resource at times may conflict with the requirements of regular buildings codes. The Office of the State Fire Marshall has ultimate authority over health and safety and may require use of the standard building code in some instances.

The University will use the HSR to help meet SOIS and CHBC requirements as it includes treatments that draw from National Park Service Preservation Briefs relevant to the proposed renovation work. The university will ensure that the HSR's historic preservation objectives and treatment requirements for the Governor's Hall building are incorporated into the design and

construction specifications. The University will consult with the qualified preservation planner and with staff preservation architects within the Architectural Review and Environmental Compliance Unit of the State Office of Historic Preservation for guidance as needed. The university will ensure the HSR's historic preservation objectives and treatment requirements for the Governor's Hall building are incorporated into the proposed renovation specifications.

Mitigation Measure LRDP-CUL-1b: Conduct project-specific level surveys to identify built-environment historical resources

Before altering or otherwise affecting a building or structure 50 years of age or older, the University will retain a qualified architectural historian to record it on a California Department of Parks and Recreation DPR 523 form or equivalent documentation. Its significance will be assessed by a qualified architectural historian, using the significance criteria set forth for historic resources under State CEQA Guidelines Section 15064.5. The evaluation process will include the development of appropriate historical background research as context for the assessment of the significance of the resource in the history of the Sacramento Campus and the region. If the university determines an historical resource will be affected by a project-level action, then Mitigation Measure LRDP-CUL-1b shall apply.

Mitigation Measure LRDP-CUL-1c: Implement measures to protect identified historic resources

For a building or structure that qualifies as a historical resource, the qualified architectural historian and the University will consult to consider measures that would enable the project to avoid direct or indirect impacts on the building or structure. These could include preserving a building on the margin of the project site, using it "as is," or other measures that would not alter the building. If alteration of a historic building or structure cannot be reasonably avoided, necessary alterations will be carried out in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (Section 15126.4[b][1]). If the removal of a historic building or structure cannot be avoided, the University will ensure that a qualified architectural historian thoroughly documents the building and associated landscaping and setting. Documentation will include still and video photography and a written documentary record of the building to the standards of the Historic American Building Survey or Historic American Engineering Record, including accurate scaled mapping, architectural descriptions, and scaled architectural plans, if available.

Impact LRDP-CUL-2: Potential to cause a substantial adverse change in the significance of an archaeological resource

No archaeological resources have been identified within the 2020 LRDP Update plan area. However, there is potential that buried archaeological resources could be encountered during construction. Implementation of Mitigation Measures CUL-2a and CUL-2b would ensure that impacts on unknown archaeological resources are avoided. Therefore, this impact would be **less than significant with mitigation**.

As discussed in Chapter 2, *Project Description*, the 2020 LRDP Update includes up to 7.07 million gross square feet of new development throughout the Sacramento Campus. New development would require various levels of grading, excavation, and other ground disturbance. While the 2020 LRDP Update indicates that the majority of development and improvements would occur in areas

that have been previously graded, there is the possibility that unknown archaeological resources could be encountered during ground-disturbing activities. As noted in Section 3.4.2, there are no known archaeological resources within the 2020 LRDP Update plan area. However, ground disturbance could damage or destroy previously undiscovered archaeological resources, which would be a significant impact. Implementation of Mitigation Measures CUL-2a and CUL-2b would ensure that impacts on unknown archaeological resources are avoided, and therefore, this impact would be **less than significant with mitigation**.

The 2010 LRDP Final EIR concluded that impacts on archaeological resources would be less than significant with mitigation. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-CUL-2a: Conduct cultural resources sensitivity training

Prior to any ground disturbance, construction crews will be required to attend a cultural resources sensitivity training. The training will focus on identifying potential archaeological resources as well as human remains. If potential archaeological resources or human remains are encountered, construction crews will be instructed to notify the University immediately.

Mitigation Measure LRDP-CUL-2b: Stop work in the event of discovery of an archaeological resource

If an archaeological resource is discovered during construction, all project-related ground disturbance within 100 feet of the find will cease. The University will contact a qualified archaeologist within 24 hours to inspect the site. If a resource is determined to qualify as a unique archaeological resource (as defined by CEQA), and the University determines, in compliance with PRC 21083.2, which requires preservation in place as a first option, that the resource cannot feasibly be avoided, the University will retain a qualified archaeologist to conduct excavations to recover the material. Any archaeologically important artifacts recovered during monitoring will be cleaned, catalogued, and analyzed, with the results presented in an archaeological data recovery report.

Impact LRDP-CUL-3: Disturbance of any human remains, including those interred outside of dedicated cemeteries

There is a high potential to encounter historic-era human remains, especially in the northern portion of the Sacramento Campus, where an unmarked cemetery associated with the Sacramento County Hospital was discovered in 2005. Damage or destruction of human remains would be a significant impact. Implementation of Mitigation Measures LRDP-CUL-3a and LRDP-CUL-3b would ensure that impacts on unknown archaeological resources are avoided. Therefore, this impact would be **less than significant with mitigation**.

Historic human remains could be encountered during ground-disturbing activities, especially in the northern portion of the Sacramento Campus, where a burial ground associated with the Sacramento County Hospital was located. It is estimated that between 899 and 1,174 individuals were interred at the hospital burial ground (Pacific Legacy 2005). Excavation revealed that perhaps dozens of burials in the radiation oncology lab footprint had been destroyed by previous ground-disturbing activities dating from 1927. It is likely that many burials outside of the lab area have been disturbed or destroyed by ground-disturbing activities since 1927, reducing the number of remaining intact

burials. However, intact burials could still be encountered on campus and damaged or destroyed by construction activities. Implementation of Mitigation Measures LRDP-CUL-3a and LRDP-CUL-3b would ensure that impacts on unknown archaeological resources are avoided and therefore, this impact would be **less than significant with mitigation**.

The 2010 LRDP Final EIR concluded that impacts on human remains would be less than significant with mitigation. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-CUL-3a: Retain qualified archaeologist

As a first step during a project's environmental review, the University will determine whether the project being implemented under the 2020 LRDP Update is in the portion of the campus where human remains associated with the former burial ground could likely be encountered. If the project site is in or near that area, the University will retain a qualified archaeologist to review the project information and, as necessary, develop and implement a subsurface testing program to check for human remains. If no human remains are encountered, the project may proceed to construction. If human remains are encountered, Mitigation Measure LRDP-CUL-3b will be implemented.

Mitigation Measure LRDP-CUL-3b: Stop work if human remains are encountered

In the event of a discovery on campus of human bone, suspected human bone, or a burial, all excavation within 100 feet of the find will halt immediately and the University will contact a qualified archaeologist or the County Coroner within 24 hours to determine whether the bone is human. Consistent with California Health and Safety Code Section 7050.5(b), which prohibits disturbance of human remains uncovered by excavation until the coroner has made a finding relative to PRC Section 5097.5 procedures, the University will ensure that the remains, and a reasonable buffer around the remains established in coordination with the coroner or archaeologist, are protected against further disturbance. If it is determined that the find is of Native American origin, the University will comply with the provisions of PRC Section 5097.98 regarding identification and involvement of the Native American Most Likely Descendant (MLD).

If human remains cannot be left in place, the University will ensure that the qualified archaeologist and the MLD are provided opportunity to confer on archaeological treatment of human remains, and that appropriate studies, as identified through this consultation, are carried out prior to reinterment. The University will provide results of all such studies to the local Native American community and will provide an opportunity of local Native American involvement in any interpretative reporting.

If the human remains are determined to be historic, and cannot be avoided and preserved in place, the area of the project site will be excavated under the supervision of an archaeologist and all human remains and associated artifacts will be removed from the site and analyzed. After analysis, all recovered human remains and associated artifacts will be placed in caskets and buried in a single mass grave at a local cemetery.

Impact LRDP-TCR-1: Potential to cause a substantial adverse change in the significance of a tribal cultural resource with cultural value to a California Native American tribe and that is 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)

The University has not received requests from tribes culturally or traditionally affiliated with the plan area in Sacramento County to be notified of opportunities to consult on new projects under AB 52. Therefore, the University is not required to take further action under AB 52. Because there were no requests under AB 52, no consultations occurred, and no tribal cultural resources listed or eligible for listing in the CRHR or a local register were identified under the AB 52 process. Therefore, there would be **no impact**.

As discussed in the environmental setting section above, no local tribes have requested notification for projects in Sacramento County, and no known tribal cultural resources are located on the Sacramento Campus.

Subsequent discretionary projects may be required to prepare site-specific, project-level analysis to fulfill CEQA requirements, which may include additional AB 52 consultation that could lead to the identification of tribal cultural resources. Although no tribal cultural resources within the plan area have been identified, it is possible that tribal cultural resources could be identified during analysis of subsequent projects. California law recognizes the need to protect tribal cultural resources from inadvertent destruction and the procedures for the treatment of tribal cultural resources are contained in PRC Section 21080.3.2 and Section 21084.3 (a).

Because the University has not received requests from tribes culturally or traditionally affiliated with the plan area in Sacramento County to be notified of opportunities to consult on new projects under AB 52, the University is not required to take further action under AB 52 and there would be **no impact**.

Tribal cultural resources were not a resource topic considered under CEQA at the time the 2010 LRDP EIR was prepared. Therefore, this impact was not addressed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

If tribal cultural resources are identified during project implementation, compliance with PRC Section 21080.3.2 and Section 21084.3(a) would be required.

Impact LRDP-TCR-2: Potential to cause a substantial adverse change in the significance of a tribal cultural resource with cultural value to a California Native American tribe and that is a resource determined by the lead agency to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1

The University has not received requests from tribes culturally or traditionally affiliated with the plan area in Sacramento County to be notified of opportunities to consult on new projects under AB 52. Therefore, the University is not required to take further action under AB 52. Because there were no requests under AB 52, no consultations occurred and no tribal cultural resources with cultural value to a California Native American Tribe were identified under the AB 52 process. Therefore, there would be **no impact**.

Because the University has not received requests from tribes culturally or traditionally affiliated with the plan area in Sacramento County to be notified of opportunities to consult on new projects under AB 52, the University is not required to take further action under AB 52, and there would be **no impact**.

Tribal cultural resources were not a resource topic considered under CEQA at the time the 2010 LRDP EIR was prepared. Therefore, this impact was not addressed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

If tribal cultural resources are identified during project implementation, compliance with PRC Section 21080.3.2 and Section 21084.3(a) would be required.

3.5 Energy

This section describes the regulatory and environmental setting for energy in the plan area, analyzes effects on energy that would result from implementation of the 2020 LRDP Update, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts. Comments related to energy were received during the Notice of Preparation scoping period and included comments from SMUD on energy efficiency, cumulative impacts to energy and the need for electrical infrastructure.

3.5.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, federal, state, and regional and local regulations, laws, and policies relevant to energy in the plan area.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the Sacramento Campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts.

UC Sustainable Practices Policy

The University of California has a system-wide policy regarding sustainability practices and performance goals and targets (University of California 2019). The UC Sustainable Practices Policy, which is regularly updated (most recently in July 2019) to further sustainability within the University of California system, covers the following 10 areas of operational sustainability.

- Green building design
- Clean energy
- Climate protection
- Sustainable transportation
- Sustainable building operations for campuses
- Zero waste
- Sustainable procurement
- Sustainable food services
- Sustainable water systems
- Sustainability at UC Health

Of these, the most relevant targets related to energy use are established in the green building design, clean energy, climate protection, sustainable transportation, and sustainable water systems sections of the policy. In particular, through targets established with respect to green building design, UC Davis is committed to achieving a Leadership in Energy and Environmental Design (LEED) certification of Silver at a minimum but striving for Silver or higher with new construction, which would include structures and facilities constructed under the 2020 LRDP Update.

In September 2017, the UC Sustainability Steering Committee approved additional changes to the clean energy section, which would establish the following goals and practices.

- 100 percent clean electricity by 2025 (clean electricity is defined as having a residual greenhouse gas emission factor that is less than 150 pounds of carbon dioxide [CO₂] per megawatt-hour [MWh]), to be met through a campus-determined mix of onsite and offsite renewables.
- Implementation of energy efficiency actions in buildings and infrastructure systems to reduce the location's (campus's) energy use intensity by an average of at least 2 percent annually.
- By 2025, at least 40 percent of the natural gas combusted onsite at each location will be biogas (University of California 2019).

In addition, a change to the green building design policy was recently approved by the UC Sustainability Steering Committee on January 30, 2018. The policy states “No new building or major renovation that is approved after June 30, 2019 shall use onsite fossil fuel combustion (e.g., natural gas) for space and water heating (except hospitals which are an exception, and those projects connected to an existing campus central thermal infrastructure). Projects unable to meet the requirement shall document the rationale for that decision” (University of California 2019). The documentation must include a plan to mitigate associated greenhouse gas (GHG) emissions, among other requirements.

UC Davis Climate Action Plan

As described in further detail in Section 3.7, *Greenhouse Gas Emissions*, the UC Sustainable Practices Policy on climate protection targets three goals: reduction of GHG emissions to 2000 levels by 2014, to 1990 levels by 2020, and climate neutrality as soon as feasible. *Climate neutrality* is defined in the policy as the University having a net zero impact on the earth's climate, which is to be achieved by minimizing GHG emissions as much as possible and purchasing carbon offsets or other measures to mitigate the remaining GHG emissions.

UC Davis has prepared the *2009–2010 Climate Action Plan* (CAP) (University of California, Davis 2010), which includes both the Davis and Sacramento Campuses, as well as outlying facilities. The CAP describes and addresses policy and regulatory requirements of (1) the UC Sustainable Practices Policy; (2) Assembly Bill (AB) 32, including CARB's GHG Mandatory Reporting Program; (3) the American College and University Presidents Climate Commitment; (4) CEQA; and (5) EPA reporting requirements. The CAP provides documentation of how campus GHG emissions are calculated, a report of 2008 emissions, estimates of past (to 1990) and future emissions (to 2020), a statement of GHG emission reduction goals, a characterization of options and methods to reduce emissions, and a blueprint for future action.

The CAP was written before the UC Carbon Neutrality Initiative was announced and written into the UC Sustainable Practices Policy. As such, the CAP uses the 2014 and 2020 targets, rather than the UC

committing to emitting net zero greenhouse gases from its buildings and fleet by 2025, with an understanding that climate neutrality will require fundamental shifts in global and national energy policy, energy production, and technologies currently using fossil fuels. The CAP focuses on emissions related to campus operations, rather than commuting and business air travel, because the share of operations-related emissions is much larger (three to four times greater) than the share attributable to commuting and air travel or commuting alone, respectively. The CAP provides analysis of commuting and air travel reduction options but does not quantify emissions reductions for those options (University of California, Davis 2010). UC Davis is currently in the process of updating the CAP. UC Davis is also conducting a transportation demand management planning study to determine options for additional GHG reduction related to commuting.

Federal

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the United States would meet certain fuel economy goals. Through this act, Congress established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the Act, the National Highway Traffic and Safety Administration, which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and for revising existing standards. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with federal fuel economy standards is determined based on each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States. The Corporate Average Fuel Economy (CAFE) program, administered by the U.S. Environmental Protection Agency (EPA), was created to determine vehicle manufacturers' compliance with the fuel economy standards. EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, USDOT is authorized to assess penalties for noncompliance.

Energy Policy Act of 1992

The Energy Policy Act of 1992 (EPAct) was passed to reduce the country's dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPAct requires certain federal, state, and local government and private fleets to purchase a percentage of light duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in EPAct. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs.

Energy Policy Act of 2005

The Energy Policy Act of 2005 was signed into law on August 8, 2005. Generally, the act provides for renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for a clean

renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

State

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the California Energy Commission (CEC). The act established state policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. The California Public Utilities Commission (CPUC) regulates privately owned utilities in the energy, rail, telecommunications, and water sectors.

Assembly Bill 2076: Reducing Dependence on Petroleum

Pursuant to AB 2076 (Chapter 936, Statutes of 2000), CEC and the California Air Resources Board (CARB) prepared and adopted a joint agency report in 2003, *Reducing California's Petroleum Dependence*. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and to 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita vehicle miles traveled (VMT) (California Energy Commission and California Air Resources Board 2003). Further, in response to the CEC's 2003 and 2005 *Integrated Energy Policy Reports*, Governor Joseph Graham "Gray" Davis directed CEC to take the lead in developing a long-term plan to increase alternative fuel use. A performance-based goal of AB 2076 was to reduce petroleum demand to 15 percent below 2003 demand by 2020.

Integrated Energy Policy Report

Senate Bill (SB) 1389 (Chapter 568, Statutes of 2002) required CEC to: "[C]onduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The Energy Commission shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety" (Public Resources Code Section 25301(a)). This work culminated in the *Integrated Energy Policy Report* (IEPR).

CEC adopts an IEPR every 2 years and an update every other year. The 2019 IEPR is the most recent IEPR, which was adopted February 20, 2020. The 2019 IEPR provides a summary of priority energy issues currently facing the state, outlining strategies and recommendations to further the State's goal of ensuring reliable, affordable, and environmentally responsible energy sources. Energy topics covered in the report include progress toward statewide renewable energy targets and issues facing future renewable development; efforts to increase energy efficiency in existing and new buildings; progress by utilities in achieving energy efficiency targets and potential; improving coordination among the state's energy agencies; streamlining power plant licensing processes; results of preliminary forecasts of electricity, natural gas, and transportation fuel supply and demand; future energy infrastructure needs; the need for research and development efforts to support statewide energy policies; and issues facing California's nuclear power plants.

Senate Bill 1078: California Renewables Portfolio Standard Program

SB 1078 (Chapter 516, Statutes of 2002) establishes a renewable portfolio standard (RPS) for electricity supply. The RPS requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide 20 percent of their supply from renewable sources by 2017. This target date was moved forward by SB 1078 to require compliance by 2010. In addition, electricity providers subject to the RPS must increase their renewable share by at least 1 percent each year. The outcome of this legislation will impact regional transportation powered by electricity. As of 2016, the State has reported that a minimum of 25 percent of electricity has been sourced from certified renewable sources (California Public Utilities Commission 2017).

Senate Bill X1-2: California Renewable Energy Resources Act

SB X1-2 of 2011 required all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 set a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also required the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50 percent of the total renewable energy for the 2011–2013 compliance period, at least 65 percent for the 2014–2016 compliance period, and at least 75 percent for 2016 and beyond.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. This act also requires doubling of the energy efficiency savings in electricity and natural gas for retail customers through energy efficiency and conservation by December 31, 2030.

Energy Action Plan

The first *Energy Action Plan* (EAP) emerged in 2003 from a crisis atmosphere in California's energy markets. California's three major energy policy agencies (CEC, CPUC, and the Consumer Power and Conservation Financing Authority [established under deregulation and now defunct]) came together to develop one high-level, coherent approach to meeting California's electricity and natural gas needs. It was the first time that energy policy agencies formally collaborated to define a common vision and set of strategies to address California's future energy needs and emphasize the importance of the impacts of energy policy on the California environment.

In the October 2005 *Energy Action Plan II: Implementation Roadmap For Energy Policies*, CEC and CPUC updated their energy policy vision by adding some important dimensions to the policy areas included in the original EAP, such as the emerging importance of climate change, transportation-related energy issues and research and development activities. The CEC adopted an update to the EAP II in February 2008 that supplements the earlier EAPs and examines California's ongoing actions in the context of global climate change.

Assembly Bill 1007: State Alternative Fuels Plan

AB 1007 (Chapter 371, Statutes of 2005) required CEC to prepare a state plan to increase the use of alternative fuels in California. CEC prepared the *State Alternative Fuels Plan* (SAF Plan) in partnership with CARB and in consultation with other state, federal, and local agencies. The SAF Plan presents strategies and actions California must take to increase the use of alternative, non-petroleum fuels in a manner that minimizes the costs to California and maximizes the economic benefits of in-state production. The SAF Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuel use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Executive Order S-06-06

Executive Order (EO) S-06-06, signed on April 25, 2006, established targets for the use and production of biofuels and biopower, and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The EO established the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050. The EO also calls for California to meet a target for use of biomass electricity. The *2011 Bioenergy Action Plan* identifies those barriers and recommends actions to address them so that the state can meet its clean energy, waste reduction, and climate protection goals. The *2012 Bioenergy Action Plan* updated the 2011 plan and provides a more detailed action plan to achieve the following goals.

- Increase environmentally and economically sustainable energy production from organic waste.
- Encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications.
- Create jobs and stimulate economic development, especially in rural regions of the state.
- Reduce fire danger, improve air and water quality, and reduce waste. (O'Neill 2012)

As of 2018, 2.35 percent of the total electricity system power in California was derived from biomass (California Energy Commission 2018).

California Building Standards Code

The California Building Standards Code, Title 24 of the California Code of Regulations, contains the regulations that govern the construction of buildings in California. Within the Building Standards Code, two parts pertain to the incorporation of both energy efficient and green building elements into land use development. Part 6 is California's Energy Efficiency Standards for Residential and Nonresidential Buildings and Part 11 is the California Green Building Standards, also known as CALGreen. Title 24 was established by CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy efficiency standards for residential and non-residential buildings. The most recent Title 24 standards were updated in 2019 and became effective January 1, 2020. The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary because

of local climatologic, geologic, or topographic conditions, provided that these standards exceed those provided in Title 24.

Assembly Bill 32, Climate Change Scoping Plan and Update

In December 2008, CARB adopted its first version of its *Climate Change Scoping Plan*, which contained the main strategies California will implement to achieve the mandate of AB 32 (2006) to reduce statewide GHG emissions to 1990 levels by 2020. In May 2014, CARB released and subsequently adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching the goals of AB 32 (2006) and evaluate the progress made between 2000 and 2012 (California Air Resources Board 2014). After releasing multiple versions of proposed updates in 2017, CARB adopted *California's 2017 Climate Change Scoping Plan* (2017 Scoping Plan) in December of that same year (California Air Resources Board 2017). The 2017 Scoping Plan indicates that California is on track to achieve the 2020 statewide GHG target mandated by AB 32 of 2006 (California Air Resources Board 2017:9). It also lays out the framework for achieving the mandate of SB 32 of 2016 to reduce statewide GHG emissions to at least 40 percent below 1990 levels by the end of 2030 (California Air Resources Board 2017). The 2017 Scoping Plan identifies the GHG reductions needed by each emissions sector (e.g., transportation, building energy, agriculture).

The measures identified in the 2017 Scoping Plan have the co-benefits of reducing California's dependency of fossil fuels and making land use development and transportation systems more energy efficient. More details about the Statewide GHG reduction goals and Scoping Plan measures are provided in the regulatory setting of Section 3.7, *Greenhouse Gas Emissions*.

Senate Bill 375

SB 375, signed by Governor Arnold Schwarzenegger in September 2008, aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a sustainable communities strategy (SCS) or alternative planning strategy, showing prescribed land use allocation in each MPO's regional transportation plan. CARB, in consultation with the MPOs, is to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in their respective regions for 2020 and 2035. Implementation of SB 375 has the co-benefit of reducing California's dependency of fossil fuels and making land use development and transportation systems more energy efficient.

The Sacramento Area Council of Governments (SACOG) serves as the MPO for Sacramento, Placer, El Dorado, Yuba, Sutter, and Yolo Counties, excluding those lands located in the Lake Tahoe Basin. The UC Davis Sacramento Campus is in Sacramento County. SACOG adopted its *Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) 2035* in 2012, and completed an update adopted on November 18, 2019 (Sacramento Area Council of Governments 2019). For the 2020 MTP/SCS, CARB assigned SACOG a target of 19 percent per capita GHG reduction. The MTP/SCS forecasted land use development by community types: center and corridor communities, established communities, developing communities, rural residential communities, and lands not identified for development in the MTP/SCS planning period.

Executive Order B-30-15

On April 20, 2015, Governor Edmund G. Brown Jr. signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG reduction

targets with those of leading international governments such as the 28-nation European Union, which adopted the same target in October 2014. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, discussed above). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the United States to limit global warming below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Executive Order B-48-18: Zero Emission Vehicles.

In January 2018, Governor Brown signed EO B-48-18 requiring all State entities to work with the private sector to put at least 5-million zero-emission vehicles on the road by 2030, as well as install 200 hydrogen fueling stations and 250,000 zero-emissions chargers (10,000 of which to be direct current fast chargers) by 2025. This EO also requires all State entities to continue to partner with local and regional governments to streamline the installation of zero-emission vehicle infrastructure. The Governor's Office of Business and Economic Development is required to publish a Plug-in Charging Station Development Guidebook and update the 2015 *Hydrogen Station Permitting Guidebook* to aid in these efforts. All State entities are required to participate in updating the 2018 *Zero-Emissions Vehicle Action Plan* to help expand private investment in zero-emissions vehicle infrastructure with focus in low-income and disadvantaged communities (Governor's Interagency Working Group on Zero-Emission Vehicles 2018). Additionally, all State entities are to support and recommend policies and actions to expand infrastructure in homes, through the Low Carbon Fuel Standard, and recommend how these actions can strengthen the economy, create jobs, and ensure affordability and accessibility for all drivers.

California and 22 other states filed suit in November 2019 to challenge the Trump administration's decision to revoke California's authority to set stiff vehicle tailpipe emissions rules and require an increasing number of zero-emission vehicles. The lawsuit, filed in the U.S. Court of Appeals for the District of Columbia, seeks to overturn EPA's decision in September 2019 to revoke portions of a waiver it granted in 2013. As of the writing of this report the lawsuit is still in litigation.

Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050. Achievement of these goals has the co-benefit of reducing California's dependency of fossil fuels and making land use development and transportation systems more energy efficient.

Advanced Clean Cars Program

In January 2012, CARB approved the Advanced Clean Cars program, which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into a single package of standards for vehicle model years 2017 through 2025. The new rules strengthen the GHG standard for 2017 models and beyond. This will be achieved

through existing technologies, the use of stronger and lighter materials, and more efficient drivetrains and engines. The program's zero-emission vehicle regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025. The program also includes a clean fuels outlet regulation designed to support the commercialization of zero-emission hydrogen fuel cell vehicles planned by vehicle manufacturers by 2015 by requiring increased numbers of hydrogen fueling stations throughout the state. The number of stations will grow as vehicle manufacturers sell more fuel cell vehicles. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions than the statewide fleet in 2016 (California Air Resources Board 2016).

Regional and Local

City of Sacramento General Plan

The *Sacramento 2035 General Plan* was adopted in March 2015. The Utilities element contains the following goals and policies that are relevant to energy resources:

GOAL U 6.1: Adequate Level of Service. Provide for the energy needs of the city and decrease dependence on nonrenewable energy sources through energy conservation, efficiency, and renewable resource strategies.

Policy U 6.1.1: Electricity and Natural Gas Services. The City shall continue to work closely with local utility providers to ensure that adequate electricity and natural gas services are available for existing and newly developing areas.

Policy U 6.1.4: Energy Efficiently of City Facilities. The City shall improve energy efficiency of City facilities to consume 25 percent less energy by 2030 compared to the baseline year of 2005.

Policy U 6.1.14: Energy Efficiency Partnerships. The City shall continue to build partnerships (e.g., Sacramento County Business Environmental Resource Center (BERC) and SMUD) to promote energy efficiency and conservation for the business community and residents. (City of Sacramento 2015)

Environmental Setting

This section includes the environmental setting relevant to energy in the 2020 LRDP Update plan area.

Energy Facilities and Services on Campus

The Sacramento Campus currently operates a Central Cogeneration Plant (Central Energy Plant) that provides electricity to the campus. The Central Energy Plant provides normal and emergency electrical power, chilled and hot water for cooling and heating, and process steam to most campus buildings. The Central Energy Plant on the Sacramento Campus includes a chilled water system composed of multiple absorption and centrifugal chillers, with an operating capacity of 10,500 tons of water. The Central Energy Plant uses natural gas provided by Pacific Gas and Electric Company (PG&E). According to the Utility Master Plan (UMP) (Affiliated Engineers, Inc. 2019), the Central Energy Plant is designed to accommodate some growth in utility demand.

The Sacramento Campus peak cooling load in 2019 (baseline) was estimated to be 9,500 tons of refrigeration and is projected to grow to 12,100 tons by 2030. The campus peak heating load in 2019 was estimated to be 50,000 British thermal units per hour (MBH) and projected to grow to

82,500 MBH by 2030. The Sacramento Campus peak electric power load in 2019 was 17.2 megawatts (MW) and is projected to grow up to 19.4 MW by 2030. The current peak emergency power load is 7.7 MW and projected to grow up to 9.3 MW by 2030 (Affiliated Engineers, Inc. 2019).

Energy Use and Global Warming

Scientists and climatologists have produced evidence that the burning of fossil fuels by vehicles, power plants, industrial facilities, residences, and commercial facilities has led to an increase in the earth's temperature. For an analysis of GHG production and proposed 2020 LRDP Update impacts on climate change, please see Section 3.7, *Greenhouse Gas Emissions*.

3.5.2 Environmental Impacts

This section describes the environmental impacts associated with energy that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

Construction

Regarding energy use (e.g., fuel use) during construction, it is assumed that only diesel fuel would be used in fossil-fuel powered construction equipment and a mix of diesel and gasoline fuel in on-road vehicles for hauling materials and worker commute trips. The same assumptions of construction equipment numbers, horsepower ratings, and load factors used to estimate construction CO₂ emissions (see Section 3.7, *Greenhouse Gas Emissions*) were used to calculate construction-related fuel use. Estimated CO₂ emissions were used to characterize gallons of fuel consumed based on the carbon content of the fuel (Climate Registry 2019). Implementation of projects as a result of the 2020 LRDP Update would annually consume 10 MWh of electricity to power onsite contractor trailers and electric equipment, exclusive of Aggie Square Phase I (Davis pers. comm.). Electricity usage during construction of Aggie Square Phase I was obtained from UC Davis staff.

Operations

The Central Energy Plant normally operates to follow the electrical load of the campus with a small amount of power continuously exported to SMUD. However, in the event of a normal or forced outage of the gas turbine, the entire campus load is served by SMUD utility power import. Buildings not connected to the Central Energy Plant get electricity directly from SMUD for lighting and to power appliances, lab equipment, and other devices. Electricity would also be consumed to treat and convey water and wastewater to and from the UC Davis Sacramento Campus. Electricity consumption estimates (MWh/year) for existing and future campus operations were obtained using the data and sources described in Section 3.7, *Greenhouse Gas Emissions*.

The Central Energy Plant uses natural gas provided by PG&E to power five steam boilers and eight hot water boilers, and one gas turbine. The five steam boilers also consume minor amounts of diesel fuel oil. Natural gas and diesel fuel oil estimates (therms/year) for existing and future campus

operations were obtained using the data and sources described in Section 3.7, *Greenhouse Gas Emissions*.

Two diesel emergency generators are currently maintained at the Facilities Support Services Building (FSSB) and Administrative Support Building (ASB) and the Central Energy Plant has five 2,500 kilovolt-ampere emergency generators. Gasoline fuel tanks and pumping equipment are also located at the Fleet Services Building (FSB). Implementation of the 2020 LRDP Update will increase the number of diesel generators and fueling operations at the onsite gasoline dispensing station. Diesel and gasoline consumption by these sources for existing and future campus operations were obtained using the data and sources described in Section 3.7, *Greenhouse Gas Emissions*.

Transportation fuel-use estimates were calculated by applying average fuel usage rates per vehicle mile to VMT data related to the 2020 LRDP Update (see Section 3.15, *Transportation, Circulation, and Parking*, for an explanation of the assumptions behind the VMT modeling). CARB's EMFAC2017 model includes average fuel usage rates by vehicle class, fuel type (e.g., diesel, gasoline, electric, and natural gas), speed bin, calendar year, and county. Fehr and Peers (project traffic consultant) provided daily VMT attributable to the trips entering and exiting the Sacramento Campus (Hananouchi pers. comm.). Fuel usage rates from EMFAC2017 representing Sacramento County in 2019 and 2040 were applied to the 2020 LRDP Update VMT data. Daily VMT were adjusted to annual VMT using a conversion factor of 347, which accounts for holidays and weekday/weekend business operations (Hananouchi pers. comm.).

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operations.
- Conflict with or obstruction of a state or local plan for renewable energy or energy efficiency.

Impacts and Mitigation Measures

Impact LRDP-EN-1: Wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation

Implementation of the 2020 LRDP Update would increase electricity and natural gas consumption at the site relative to existing conditions during construction activities, as well as long-term operational activities. However, the energy needs for construction would be temporary and not require additional capacity or increase peak or base period demands for electricity or other forms of energy. UC Davis is committed to meeting the UC Sustainable Practices Policy and the UC Davis Sacramento Campus Design Guidelines (including attaining LEED Silver) in all new/renovated facilities, which is designed to reduce the wasteful use of materials (through recycling building materials) and increase building energy efficiently. Therefore, implementation of the 2020 LRDP Update would not result in wasteful, inefficient, and unnecessary consumption of energy, and this impact would be **less than significant**.

Construction-Related Energy

Energy would be required to implement the 2020 LRDP Update, including operation and maintenance of construction equipment and transportation of construction materials. The energy expenditure required to construct the buildings and infrastructure associated with the 2020 LRDP Update would be nonrecoverable. Most energy consumption would result from operation of off-road construction equipment and on-road vehicle trips associated with commutes by construction workers and haul truck trips. An estimated 4 million gallons of diesel and gasoline would be consumed during implementation of the 2020 LRDP Update. In addition to the liquid fuel, construction would consume approximately 23,000 MWh of electricity. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy efficient than the equipment used at comparable construction sites in other parts of the state. Idling of on-site equipment during construction would be limited to no more than 5 minutes in accordance with California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485. Further, on-site construction equipment may include alternatively fueled vehicles (such as natural gas) where feasible. Finally, the selected construction contractors would use the best available engineering techniques, construction and design practices, and equipment operating procedures, thereby ensuring that the wasteful consumption of fuels and use of energy would not occur. Therefore, this impact would be **less than significant**.

Operational Building Energy and Stationary Sources

The 2020 LRDP Update would increase electricity and natural gas consumption in the plan area relative to existing conditions. However, improvements to existing facilities to increase efficiency, increase renewable energy generation, reduce water consumption and waste generation, and encourage alternative transportation and low-emissions vehicles would also occur under the 2020 LRDP Update and according to the UC Sustainable Practices Policy, thereby reducing the impacts of increased development. With respect to stationary sources, the 2020 LRDP Update would include the operation of five diesel emergency generators, five steam boilers and eight hot water boilers, and one gas turbine. Two diesel emergency generators are also currently maintained at the FSSB and ASB. With implementation of the 2020 LRDP Update, there would be a total of nine generators. Table 3.5-1 summarizes the levels of energy consumption by utility for existing (2019) and full implementation of the 2020 LRDP Update.

Table 3.5-1. UC Davis Sacramento Campus 2019 Existing and 2020 LRDP Update Utilities

Utility	2019 Existing	2020 LRDP Update	Increase
Electricity (MWh)	15,834	60,940	45,106
Natural gas (therms)	11,698,753	13,016,053	1,317,300
Diesel Fuel Oil (boilers) (gal)	439	487	48
Onsite Gasoline Dispensing (gal)	40,489	51,677	11,188
Emergency power (gal)	12,033	24,888	12,855

Source: ICF modeling.

gal = gallons; kWh = kilowatt-hours.

As shown in Table 3.5-1, the 2020 LRDP Update would result in an increase of approximately 45,000 MWh of electricity, 1,317,300 therms of natural gas, and 48 gallons of diesel fuel use at implementation under the 2020 LRDP Update compared to existing (2019) conditions. UC Davis's

UMP indicates that electric power load served by the Central Energy Plant is projected to increase from 17.2 megawatts under existing conditions to 19.4 megawatts with implementation of the 2020 LRDP Update (i.e., increase of 2.2 megawatts). This projection accounts for energy benefits achieved by demand side load reduction measures (i.e., energy conservation measures to reduce the heating and cooling load and electricity consumption), pursuant to University's Sustainable Practices Policy. Additional natural gas consumed to serve this added load is proportional to the heat input to the turbine. There is approximately a 5 percent increase in natural gas usage for every 1 megawatt of additional power output (Musat pers. comm.). UC Davis engineers therefore project an 11 percent increase in natural gas consumption at the Central Energy Plant to serve the additional 2.2 megawatts of electric power load associated with implementation of the 2020 LRDP Update (Musat pers. comm.).

The development that is considered part of the 2020 LRDP Update implementation would be subject to attainment at a minimum of LEED Silver (strive for Gold) standards and would exceed California Code of Regulations Title 24 requirements through implementation of the UC Sustainable Practices Policy. Specifically, acute care/hospital facilities and medical office buildings would be designed, constructed, and commissioned to outperform American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) 90.1 - 2010 by at least 30 percent or meet the whole-building energy performance targets listed in Table 2 in Section V.A.3 of the UC Sustainable Practices Policy. In addition, the Sacramento Campus would continue to implement the conservation and efficiency programs (e.g., Green Commuter Program, Clean Energy Efforts) identified above, and is committed to meeting the goals of the UC Sustainable Practices Policy that would result in further reductions in energy use and increased use of onsite renewable energy. Therefore, this impact would be **less than significant**.

Operational Transportation Energy

Operational fuel consumption with implementation of the 2020 LRDP Update is estimated to be approximately 1,452,000 gallons of diesel/gasoline, and 2.4 million kBtu of natural gas per year. Implementation of the 2020 LRDP Update would result in additional vehicle travel generated by the Sacramento Campus. However, the Sacramento Campus is a low VMT-generating area of the Sacramento region with access to mass transit and multiple travel options. The 2020 LRDP Update would further add to the campus' existing mix of medical, education, and employment uses, as well as increase complementary land uses, which would increase internal trip capture and reduce VMT generation. Other elements of the project such as providing on-campus housing, enhanced bicycle facilities, and the Green Commuter Program would further reduce VMT and therefore reduce transportation energy. Energy used for trips generated by operation of uses anticipated under the 2020 LRDP Update would not be considered inefficient, wasteful, and unnecessary.

The 2010 LRDP Final EIR concluded that implementation of the 2010 LRDP would result in a less-than-significant impact related to wasteful, inefficient, or unnecessary consumption of energy resources. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-EN-2: Conflict with or obstruction of a state or local plan for renewable energy or energy efficiency

The 2020 LRDP Update would exceed Title 24 Building Energy Efficiency Standards by attainment of LEED Silver standards at a minimum (striving for Gold) and continued implementation of the UC Sustainable Practices Policy and other efficiency programs and initiatives. Therefore, this impact would be **less than significant**.

Development under the 2020 LRDP Update would exceed Title 24 Building Energy Efficiency Standards to reduce energy use by at least 20 percent, which establish minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building installation and roofing, and lighting. Title 24 standards are anticipated to be exceeded by attainment of LEED Gold standards and through implementation of the UC Sustainable Practices Policy. In addition, the Sacramento Campus would continue to implement the conservation and efficiency programs (e.g., Carbon Neutrality Initiative, Green Commuter Program, Clean Energy Efforts) identified above, and the University is committed to meeting the goals of the UC Sustainable Practices Policy that would result in further reductions in energy use and increased use of onsite renewable energy.

While the Central Energy Plant is not subject to California's RPS, PG&E, which provides natural gas service to the campus, is subject to California's RPS to increase procurement from eligible renewable energy resource to 33 percent of total procurement by 2020 and to 50 percent of total procurement by 2030. Furthermore, federal and state regulations including the Low Carbon Fuel Standard, Clean Car Standards, and Low Emission Vehicle Program would reduce the transportation fuel demand. Under the 2020 LRDP Update, design features that reduce energy use, improve energy efficiency, and increase reliance on renewable energy sources would be needed for the Sacramento Campus to meet the goals of the UC Carbon Neutrality Initiative as written into the UC Sustainable Practices Policy. Adherence to the increasingly stringent building and vehicle efficiency standards as well as 2020 LRDP Update design features consistent with UC Carbon Neutrality goals would reduce energy consumption to be consistent with applicable plans, policies, and regulations for renewable energy or energy efficiency. Therefore, this impact would be **less than significant**.

The 2010 LRDP Final EIR did not specifically analyze compliance with state or local plans for energy efficiency.

Mitigation Measures

No mitigation measures are necessary.

3.6 Geology, Soils, and Seismicity

This section describes the regulatory and environmental setting for geology, soils, and seismicity in the plan area, analyzes effects on geology, soils, and seismicity that would result from implementation of the 2020 LRDP Update, and provides mitigation measures, if applicable, to reduce the effects of any potentially significant impacts.

No comments related to geology, soils, and seismicity were received in response to the Notice of Preparation.

3.6.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, federal, state, and regional and local regulations, laws, and policies relevant to geology, soils, and seismicity on the Sacramento Campus.

University of California

As noted in Section 3.1, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's education purposes. However, UC Davis may consider, for coordination purposes, 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.

University of California Seismic Safety Policy

The University of California Seismic Safety Policy was crafted to provide an acceptable level of earthquake safety for students, employees, and the public who occupy University facilities and leased facilities, to the extent feasible by present earthquake engineering practice. Feasibility is determined by balancing the practicality and the cost of protective measures, depending on the forecasted severity and probability of injury resulting from seismic activity.

UC Davis Environmental Health and Safety

The UC Davis Environmental Health and Safety (EHS) department provides programs and leadership on campus safety topics including natural and man-made disaster preparedness, fire prevention, personal and workplace safety, and risk management for campus research and other activities.

Federal

National Earthquake Hazards Reduction Act

The national Earthquake Hazards Reduction Act of 1977 was passed to reduce the risks to life and property resulting from earthquakes. The act established the National Earthquake Hazards Reduction Program (NEHRP). The mission of NEHRP includes improved understanding,

characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. NEHRP designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRP agencies include the National Institute of Standards and Technology, National Science Foundation, and the U.S. Geological Survey (USGS).

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Alquist-Priolo Act) (Public Resources Code [PRC] Sections 2621–2630) intends to reduce the risk to life and property from surface fault rupture during earthquakes by regulating construction in active fault corridors and prohibiting the location of most types of structures intended for human occupancy across the traces of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards.

Seismic Hazards Mapping Act

The intention of the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including ground shaking, liquefaction, and seismically induced landslides. The act's provisions are similar in concept to those of the Alquist-Priolo Act: The State is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones. Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for projects in Seismic Hazard Zones until appropriate site-specific geologic or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

California Building Standards Code

The State of California provides minimum standards for building design through the California Building Standards Code (CBC) (California Code of Regulations, Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls. The state earthquake protection law (California Health and Safety Code Section 19100 et seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes.

The CBC has been modified from the International Building Code for California conditions with more detailed and/or more stringent regulations. The CBC identifies seismic factors that must be considered in structural design. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, while Chapter 18A regulates construction on unstable soils, such as expansive soils and areas subject to liquefaction. Appendix J of the CBC regulates grading activities, including drainage and erosion control. The CBC also contains a provision that provides for a preliminary soil report to be prepared to identify “...the presence of critically expansive soils or

other soil problems which, if not corrected, would lead to structural defects” (CBC Chapter 18 Section 1803.1.1.1-1803.1.1.2).

Regional and Local

City of Sacramento General Plan

The *Sacramento 2035 General Plan* was adopted in March 2015. The Public Health and Safety element contains the following goals and policies that are relevant to geology/soils/seismicity.

GOAL PHS 6.1: Compliance with Health and Safety Codes. Improve the health, safety, and visual quality of the community by ensuring compliance with State and City health and safety codes.

Policy PHS 6.1.7: Substandard and Dangerous Buildings. The City shall require all buildings that are identified as substandard or dangerous be either repaired or demolished (City of Sacramento 2015a).

Environmental Setting

Geology and Topography

The Sacramento Campus is located in the Great Valley geomorphic province of California. The Great Valley is a flat alluvial plain approximately 50 miles wide and 400 miles long in the central portion of California. Its northern part is the Sacramento Valley drained by the Sacramento River, and its southern part is the San Joaquin Valley drained by the San Joaquin River. It is surrounded by the Sierra Nevada to the east, the Tehachapi Mountains to the south, the Coastal Range to the west, and the Cascade Range to the north (City of Sacramento 2015b).

The City of Sacramento is situated at the confluence of the American and Sacramento Rivers. The topography of the city ranges from flat to gently rolling. With the exception of the stream banks along the American River, Morrison Creek, and other local drainages, ground slope within the city does not exceed 8 percent and in most places is between 0 and 3 percent (University of California, Davis, Medical Center 1989). The campus site is flat. At its closest point, the campus is located approximately 1.5 miles southwest of the American River.

Soils

The site has been mapped as underlain by soils assigned to the San Joaquin Urban Land complex (Natural Resources Conservation Service 2020). However, because the site has undergone extensive grading, an intact soil profile may not be present. In particular, topsoil is likely to be absent or highly disturbed.

The upper layer of soils at the Sacramento Campus consists of loose, fine to coarse sandy silt. These are underlain by hard, silty, and fine sandy clay soils that correlate with the Victor Plain, which is characterized by well-drained, moderately deep to deep, fine sandy silt soils that are underlain by a cemented hardpan. Below the hardpan are medium-dense to very dense silt, fine to medium gravel, and fine sandy silt. The San Joaquin Urban Land complex exhibits a moderate shrink-swell potential (or the potential for volume change with losses and gains in moisture). Erosion potential is generally low in these soils (University of California 2010).

Seismicity

The Sacramento Campus is not within or traversed by any Alquist-Priolo Earthquake Fault Zone defined by the State of California under the Alquist-Priolo Earthquake Fault Zoning Act. The site is therefore not considered subject to surface fault rupture hazard. However, like much of California, it is located in a seismically active area and is therefore subject to other hazards associated with seismicity, discussed in the following paragraphs.

Earthquake intensity is typically expressed using the Modified Mercalli Intensity (MMI) scale with values ranging from I to X (see Table 3.6-1, *Modified Mercalli Intensity Scale*). The Sacramento Campus is located in a region of low to moderate seismic activity that corresponds to a probable maximum intensity between VII and VIII on the MMI scale.

The Sacramento region has historically experienced ground shaking originating from faults in the Foothills fault zone and the Dunnigan Hills fault and may also be subject to shaking hazard associated with active faults in the eastern Coast Ranges. However, ground shaking hazard in Sacramento is considered lower than in many areas of California. According to the Probabilistic Seismic Hazards Map prepared by the California Geological Survey (CGS), the likelihood of earthquake ground motions (in terms of peak ground acceleration [Pga]) in the Sacramento area is 0.143 g on firm rock, 0.156 g for soft rock, and 0.2 g for alluvium.

Table 3.6-1. Modified Mercalli Intensity Scale

CIIM Intensity	People's reactions	Furnishings	Built Environment	Natural Environment
I	Not felt			Changes in level and clarity of well water are occasionally associated with great earthquakes at distances beyond which the earthquakes are felt by people.
II	Felt by a few.	Delicately suspended objects may swing.		
III	Felt by several; vibration like passing of truck	Hanging objects may swing appreciably.		
IV	Felt by many; sensation like heavy body striking building.	Dishes rattle.	Walls creak; window rattle.	
V	Felt by nearly all; frightens a few.	Pictures swing out of place; small objects move; a few objects fall from shelves within the community.	A few instances of cracked plaster and cracked windows with the community.	Trees and bushes shaken noticeably.

CIIM Intensity	People's reactions	Furnishings	Built Environment	Natural Environment
VI	Frightens many; people move unsteadily.	Many objects fall from shelves.	A few instances of fallen plaster, broken windows, and damaged chimneys within the community.	Some fall of tree limbs and tops, isolated rockfalls and landslides, and isolated liquefaction.
VII	Frightens most; some lose balance.	Heavy furniture overturned.	Damage negligible in buildings of good design and construction, but considerable in some poorly built or badly designed structures; weak chimneys broken at roof line, fall of unbraced parapets.	Tree damage, rockfalls, landslides, and liquefaction are more severe and widespread with increasing intensity.
VIII	Many find it difficult to stand.	Very heavy furniture moves conspicuously.	Damage slight in buildings designed to be earthquake resistant, but severe in some poorly built structures. Widespread fall of chimneys and monuments.	
IX	Some forcibly thrown to the ground.		Damage considerable in some buildings designed to be earthquake resistant; buildings shift off foundations if not bolted to them.	
X			Most ordinary masonry structures collapse; damage moderate to severe in many buildings designed to be earthquake resistant.	

Source: U.S. Geological Survey 2020.

Liquefaction occurs when saturated, unconsolidated soils lose their strength and become liquid as a result of ground shaking caused by a seismic event. Liquefaction generally occurs at depths below the water table (i.e., in saturated materials) but less than about 50 feet below the ground surface. The resulting disruption can move upward through soils after it has developed, and at its worst can result in extensive foundation damage and structural failure. Soils subject to liquefaction are found within the central area of the City of Sacramento (City of Sacramento 2015b:7-4). Although geotechnical reports have been prepared for specific projects on campus, no site-specific information on liquefaction hazard is available for all areas of the campus, and the area has not yet been mapped under the state's seismic hazards mapping program.

The structures most susceptible to seismic hazards are unreinforced masonry buildings and buildings constructed on unreinforced masonry foundations. The University has identified older buildings on the Sacramento Campus that are seismically deficient, such as the North/South Wing of

the hospital. The Sacramento Campus intends to demolish or retrofit these structures in accordance with the California Hospital Seismic Retrofit Program (Senate Bill 1953) and the UC Seismic Safety Policy.

3.6.2 Environmental Impacts

This section describes the environmental impacts associated with geology, soils, and seismicity that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

To evaluate project impacts, resource conditions that could pose a risk to the 2020 LRDP Update were identified through review of documents pertaining to these topics within the plan area. Sources consulted include USGS and CGS technical maps and guides; the Natural Resources Conservation Service Soil Survey (available through the Soil Survey Geographic Database [SSURGO]); previous environmental impact reports; background reports prepared for nearby plans and projects; and published geologic literature. The information obtained from these sources was reviewed and summarized to establish the existing conditions and identify potential environmental hazards. In determining level of significance, the analysis assumes that the project would comply with relevant laws, regulations, and guidelines.

Potential effects associated with implementation of the 2020 LRDP Update are characterized as permanent. Temporary effects from construction of specific components of the 2020 LRDP Update would be evaluated on a project-specific basis.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Potential substantial adverse effects, including the risk of loss, injury, or death involving: (1) 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; (2) strong seismic ground shaking; (3) seismic-related ground failure, including liquefaction; or (4) landslides.
- Substantial soil erosion or the loss of topsoil.
- Placement of project-related facilities on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Placement of project-related facilities 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.
- Placement of project facilities on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater.

- Direct or indirect destruction of a unique paleontological resource or site or unique geologic feature.

Issues Not Evaluated Further

The Initial Study for the 2020 LRDP Update concluded that further analysis of the following issues was not required in the EIR and no changes in circumstances or elements of the 2020 LRDP Update would affect that conclusion; therefore, these issues are not discussed further.

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - 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 (refer to CGS Special Publication 42 [California Geological Survey 2018]);
 - Strong seismic ground shaking; or
 - Landslides.
- 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 onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

Impacts and Mitigation Measures

Impact LRDP-GEO-1: Potential substantial adverse effects, including the risk of loss, injury, or death involving liquefaction

The Sacramento Campus is in an area potentially subject to liquefaction, which could involve structural damage and associated risk. Geotechnical investigations would be necessary to eliminate these risks. Implementation of Mitigation Measure LRDP-GEO-1 would reduce this impact. Therefore, this impact is considered **less than significant with mitigation**.

As stated in the 2010 LRDP Final EIR, portions of Sacramento are underlain by materials potentially subject to liquefaction. Geotechnical investigations conducted on the UC Davis Sacramento Campus in conjunction with other recent building projects identified no substantial liquefaction risk for those sites, but liquefaction hazard had not been comprehensively evaluated campus-wide. In addition, the water table at the project site is known to be 18–32 feet below ground surface. Thus, there was the potential for liquefaction at the site, and structural damage and the associated life and safety hazard could be significant. The 2010 LRDP Final EIR included Mitigation Measure LRDP-GEO-1, which required conducting a site-specific, design-level geotechnical investigation during the design phase of each building project under the 2010 LRDP.

The potential for liquefaction still exists at the UC Davis Sacramento Campus for future development associated with the 2020 LRDP Update; therefore, existing Mitigation Measure LRDP-GEO-1 still

applies to the 2020 LRDP Update Supplemental EIR. With implementation of Mitigation Measure LRDP-GEO-1, which would require implementation of the recommendations of geotechnical investigations, impacts related to liquefaction would be reduced to **less than significant**.

The 2010 LRDP Final EIR concluded that impacts related to liquefaction were less than significant with mitigation. Therefore the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-GEO-1: Conduct Geotechnical Investigation

A site-specific, design-level geotechnical investigation will be conducted during the design phase of each building project under the 2020 LRDP Update. This investigation will be conducted by a licensed geotechnical engineer and include a seismic evaluation of ground acceleration under the design event as well as relevant soil conditions at the site. Geotechnical recommendations will subsequently be incorporated into the foundation and building design for the building project.

Impact LRDP-GEO-2: Potential to result in substantial soil erosion or the loss of topsoil

Construction of individual projects would involve clearing and grading at project sites and trenching in areas where utility infrastructure would be laid. Campus projects are required to comply with National Pollutant Discharge Elimination System (NPDES) permits and would be subject to a Stormwater Pollution Prevention Plan (SWPPP). Therefore, this impact would be **less than significant**.

The UC Davis Sacramento Campus is extensively developed and has a long history of urban development and use. The topsoil in the area has already either been removed or extensively altered in conjunction with previous development; therefore, implementation of the 2020 LRDP Update would not result in a significant loss of topsoil.

Development associated with the 2020 LRDP Update would be similar to that envisioned in the 2010 LRDP. Construction would occur in areas that are extensively developed. New projects would be subject to a SWPPP, NPDES compliance, and preparation and adherence to a geotechnical investigation. Therefore, potential impacts resulting in substantial soil erosion or the loss of topsoil would be **less than significant** and no mitigation is required.

Please also see Impact LRDP-WQ-1 and Impact LRDP-WQ-3 in Section 3.9, *Hydrology and Water Quality* of Volume 1, for the effects of project-related soil erosion on water quality.

The 2010 LRDP Final EIR concluded that, with the SWPPP in place, the impact related to accelerated erosion from construction activities would be less than significant. The 2010 LRDP Final EIR also concluded that because of the nature of the projects the LRDP would entail (i.e., development of structures with associated hardscape and landscaping), and with NPDES compliance in place, 2010 LRDP implementation was not expected to result in significant long-term (i.e., operational) impacts related to accelerated erosion. This impact would be **less than significant**.

The 2010 LRDP Final EIR concluded that impacts related to erosion and loss of topsoil were less than significant. Therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-GEO-3: Placement of project-related facilities on expansive soil, creating substantial direct or indirect risks to life or property

Soils underlying the campus are characterized as moderately expansive; there would be some potential for damage to improperly designed or constructed facilities. However, the University of California requires all new construction to adhere to the provisions in the CBC, which includes provisions for construction on expansive soils. Therefore, this impact would be **less than significant**.

The soils underlying the campus are characterized as moderately expansive; there would be some potential for damage to improperly designed or constructed structures and facilities. The University's policy requires compliance with the CBC's provisions for construction on expansive soils; continued compliance with the CBC and continuation of current practices for development and design strategies under the 2020 LRDP Update would ensure that this impact would be **less than significant**.

The 2010 LRDP Final EIR concluded that the 2010 LRDP would result in less-than-significant impacts related to expansive soil. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

3.7 Greenhouse Gas Emissions

Greenhouse gases (GHGs) are gaseous compounds that limit the transmission of Earth's radiated heat out to space. GHG emissions generated from implementation of 2020 LRDP Update projects could contribute to global climate change. Climate change is a global problem and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors), which are primarily pollutants of regional and local concern. Given the long atmospheric lifetimes of GHGs, GHGs emitted by many sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Thus, GHG impacts are inherently cumulative, and the study area for impacts on GHGs includes the entire state and global atmosphere.

This section describes the regulatory and environmental setting for GHG emissions in the plan area, analyzes effects on GHG emissions that would result from implementation of the 2020 LRDP Update, and provides mitigation measures to reduce the effects of any potentially significant impacts, if applicable. Appendix D, *Air Quality and Greenhouse Gas Modeling Inputs and Supporting Data*, presents supporting GHG calculations for the impact analysis, as referenced further below.

3.7.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California federal, state, and regional and local regulations, laws, and policies relevant to GHG emissions in the plan area.

There is currently no overarching federal law specifically related to climate change or the reduction of GHG emissions. During the Obama administration, the U.S. Environmental Protection Agency (EPA) began developing GHG regulations under the federal Clean Air Act (CAA); however, no federal law is in effect at this time. At the state level, California has adopted broad statewide legislation to address various aspects of climate change and GHG emissions mitigation.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, 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.

Climate Action Plan

In 2010, UC Davis adopted the *2009–2010 Climate Action Plan* (CAP) that includes policies and strategies to reduce Davis and Sacramento campus emissions to 2000 levels by 2014 and 1990 levels by 2020 (University of California, Davis 2010). The CAP focuses on the 2014 and 2020 targets, with the understanding that climate neutrality will require fundamental shifts in global and national energy policy, energy production, and technologies currently using fossil fuels. Further, the CAP

focuses on emissions related to campus operations, instead of commuting and air travel, because emissions related to commuting and air travel are less than one-quarter of campus operations. The CAP does provide analysis of commuting and air travel reduction options but does not quantify emissions reductions for those options.

Sustainable Practices Policy

The University of California Policy on Sustainable Practices was adopted by The Regents in 2006. The policy is regularly updated, with the most recent update occurring in July 2019. The policy goals encompass 10 areas of sustainable practices: green building, clean energy, sustainable transportation, sustainable building operations, zero waste, sustainable procurement, sustainable foodservices, sustainable water systems, and sustainability at UC Davis Health. Example policies from the July 2019 Sustainable Practices Policy most relevant to the 2020 LRDP Update GHG analysis include the items described below.

Green Building Design

- All new building projects, other than acute care facilities, shall be designed, constructed, and commissioned to outperform the California Building Standards Code energy-efficiency standards by at least 20 percent or meet whole-building energy performance targets.
- Acute care/hospital facilities and medical office buildings shall be designed, constructed, and commissioned to outperform ASHRAE 90.1-2010 by at least 30 percent or meet the whole-building energy performance targets.
- No new building or major renovation that is approved after June 30, 2019 shall use onsite fossil fuel combustion (e.g., natural gas) for space and water heating (except those projects connected to an existing campus central thermal infrastructure).
- All new buildings will achieve a U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) “Silver” certification at a minimum.
- Major renovations of buildings shall outperform California Building Standards Code (Title 24 CCR Part 6), currently in effect, by 20 percent.
- Acute care facilities and medical office buildings undertaking major renovations as defined above will outperform ASHRAE 90.1-2010 by 30 percent.

Clean Energy

- By 2025, each campus and health location will obtain 100 percent clean electricity.
- By 2025, at least 40 percent of the natural gas combusted onsite at each campus and health location will be biogas.

Climate Protection¹

- Climate neutrality from Scope 1 and 2 sources (as defined by the Climate Registry) by 2025.
- Climate neutrality from specific Scope 3 (as defined by Second Nature) sources by 2050 or sooner.

Sustainable Transportation

- By 2025, zero emission vehicles (ZEV) or hybrid vehicles shall account for at least 50 percent of all new light-duty vehicle acquisitions.

¹ Emission scopes are defined below under *Emissions Inventories*.

- 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 single occupancy vehicles.
- By 2050, each location shall strive to have at least 30 percent of commuter vehicles be ZEV.

Zero Waste

- The University prioritizes waste reduction in the following order: reduce, reuse, and then recycle and compost.

Sustainable Water Systems

- Locations will reduce growth-adjusted potable water consumption 20 percent by 2020 and 36 percent by 2025, when compared to a 3-year average baseline of fiscal year (FY) 2005/06, FY 2006/07, and FY 2007/08.
- Each location will develop and maintain a Water Action Plan that identifies long term strategies for achieving sustainable water systems.

University Carbon Neutrality Initiative

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 Davis Health 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 Davis Health system, including the Sacramento Campus, 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 have been 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

UC Davis Health Green Commuter Program

The UC Davis Health Green Commuter Program, housed within Parking, Transportation and Fleet Services, is a program designed to help foster environmental stewardship while creating a better work-life balance by offering more sustainable commute modes to employees and students. These programs include carpool matching, transit planning, bicycling and walking programs as well as telework. Within these programs are incentives providing benefits to those who choose not to drive alone. A large component of the Green Commuter Program is education and outreach offered throughout the year. Bicycle classes, transit field trips and informational fairs provide direct involvement on the UC Davis Health Campus.

UC Davis Clean Energy Efforts

The Plant Operations and Maintenance (PO&M) department's Clean Energy Measures include implementing a large retrocommissioning (RCx) effort on the Sacramento Campus buildings to reduce their energy consumption through more efficient operations. Additionally, near real-time software is being deployed to identify new energy reduction measures and track existing measures to ensure long-term successes. PO&M is also continuing to retrofit inefficient lighting with light-emitting diode (LED) fixtures and modern controls to reduce energy consumption. Lastly, PO&M is working to identify and implement water reduction strategies on the Sacramento Campus.

Federal

The EPA has issued an endangerment finding and cause or contribute finding for six key well-mixed GHGs—carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF₆). The EPA has also issued the Greenhouse Gas Reporting Rule, which sets CO₂-based permitting criteria for certain industrial facilities. The Obama administration developed the Clean Power Plan in August 2015 to reduce CO₂ emission from electric power generation by 32 percent within 25 years, relative to 2005 levels. However, on February 9, 2016, the Supreme Court stayed implementation of the Clean Power Plan pending judicial review, which is still ongoing as of this analysis. As discussed in Section 3.2, *Air Quality*, the National Highway Traffic Safety Administration (NHTSA) and EPA have also proposed limits on future light-duty vehicle emission standards via the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule.

State

California has established various regulations to address GHG emissions. The most relevant of these regulations are described below.

Legislative Reduction Targets

Assembly Bill (AB) 32 (Chapter 488, Statutes of 2006), known as the Global Warming Solutions Act of 2006, requires the state to reduce GHG emissions to 1990 levels by 2020. Senate Bill (SB) 32 (passed in 2016) requires the state to reduce emissions to 40 percent below the 1990 level by 2030. The State's plan to reach these targets are presented in periodic scoping plans. The California Air Resources Board (CARB) adopted the *2017 Climate Change Scoping Plan* (Scoping Plan) in November 2017 to meet the GHG reduction requirement set forth in SB 32 (California Air Resources Board 2017a). It proposes continuing the major programs of the previous Scoping Plan, including cap-and-trade regulation; low carbon fuel standards; more efficient cars, trucks, and freight movement; Renewables Portfolio Standard (RPS); and reducing methane emissions from agricultural and other wastes. The current Scoping Plan articulates a key role for local governments, recommending they establish GHG reduction goals for both their municipal operations and the community consistent with those of the state.

Executive Orders

In 2005, Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05, which established goals to reduce California's GHG emissions to (1) 2000 levels by 2010 (achieved); (2) 1990 levels by 2020; and (3) 80 percent below the 1990 levels by 2050. Governor Jerry Brown signed EO B-18-12 in 2012 requiring state agencies to implement green building practices to improve energy, water and materials efficiency; improve air quality and working conditions for state employees; reduce costs to the state; and reduce environmental impacts from state operations. In 2018, Governor Jerry Brown signed EO B-48-18 requiring all state entities to work with the private sector to have at least 5 million zero-emissions vehicles on the road by 2030, as well as install 200 hydrogen fueling stations and 250,000 electric vehicle charging stations by 2025. Also in 2018, Governor Jerry Brown signed EO B-55-18, which established a state goal to achieve carbon neutrality as soon as possible, and no later than 2045, and to achieve and maintain net negative emissions thereafter. Note that EOs are binding on state government agencies and only some are legally binding on the University of California.

Renewables Portfolio Standard

SBs 1078 (2002), 107 (2006) 2 (2011) and 100 (2015) govern California's RPS under which investor-owned utilities, energy service providers, and Community Choice Aggregators must procure additional retail sales per year from eligible renewable sources. The current goals for renewable sources (as outlined under SB 100 in 2015) are 33 percent by 2020, 40 percent by 2024, 50 percent by 2026, and 60 percent by 2030. SB 100 further requires all electricity come from zero-carbon sources by 2045.

Integrated Waste Management

AB 341 (passed in 2011) directed the California Department of Resources Recycling and Recovery (CalRecycle) to develop and adopt regulations for mandatory commercial recycling. The resulting Mandatory Commercial Recycling Regulation (2012) requires that after July 1, 2012, certain businesses that generate 4 cubic yards or more of commercial solid waste per week arrange recycling services. AB 341 also established a statewide recycling goal of 75 percent by 2020. In April 2016, AB 1826 passed requiring businesses that generate 2 cubic yards per week of organic waste (beginning on January 1, 2020) arrange for recycling services for that waste. Diverting organic waste from landfills reduces emissions of CH₄ by reducing anaerobic decomposition of organic waste that are more likely to occur in landfills where organic waste is often buried with inorganic waste.

Cap and Trade

In 2011, CARB adopted a statewide cap-and-trade regulation 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 state-wide 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.

The Sacramento Campus is subject to cap-and-trade regulation. Through an agreement with CARB, all subject UC campuses, including the Sacramento Campus, receive allowances in exchange for a financial commitment to combat climate change through university actions. The campus acquires California Carbon Offsets to offset up to 8 percent (i.e., the maximum allowed in the cap-and-trade program) of cap-and-trade subject emissions.

Energy Efficiency Standards

The California Green Building Standards Code (Part 11, Title 24), commonly referred to as CALGreen, was adopted as part of the California Building Standards Code (Title 24, California Code of Regulations [CCR]). Part 11 of Title 24 established voluntary standards that became mandatory under the 2010 edition of the code. These involved sustainable site development, energy efficiency (in excess of California Energy Code requirements), water conservation (e.g., low-flow fixtures), material conservation, and internal air contaminants. The current energy efficiency standards were adopted in 2019 and took effect on January 1, 2020. SB 350, which was signed by Governor Brown

in October 2015, also requires a doubling of energy efficiency (electrical and natural gas) by 2030, including improvements to the efficiency of existing buildings.

Vehicle Efficiency Standards and Rules

Additional strengthening of the Pavley I standards (referred to as the *Advanced Clean Cars* measure) was adopted for vehicle model years 2017–2025 in 2012. Together, the two standards are expected to increase average fuel economy to roughly 54.5 miles per gallon in 2025. However, as noted above and discussed in Section 3.2, *Air Quality*, the federal SAFE Vehicles Rule proposes to freeze national fuel economy standards and revoke California’s ability to set statewide standards.

As discussed in Chapter 3.2, Air Quality, CARB adopted the Advanced Clean Truck Regulation in June 2020 to accelerate a large-scale transition of zero-emission medium-and-heavy-duty vehicles. The regulation requires the sale of zero-emission medium-and-heavy-duty vehicles as an increasing percentage of total annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55 percent of Class 2b – 3 truck sales, 75 percent of Class 4 – 8 straight truck sales, and 40 percent of truck tractor sales. By 2045, every new medium-and-heavy-duty truck sold in California will be zero-emission. This effort is currently in litigation.

Regional Land Use and Transportation Planning to Reduce Vehicle Miles Travelled

SB 375 (passed in 2009) requires the state’s 18 Metropolitan Planning Organizations to develop the sustainable communities strategies (SCSs) as part of their Regional Transportation Plans (RTPs) through integrated land use and transportation planning, and to demonstrate an ability to attain the GHG emissions reduction targets. CARB released updated SB 375 targets in March 2018. The revised targets require the Sacramento Area Council of Governments (SACOG) to reduce per capita GHG emissions from passenger vehicles by approximately 19 percent by 2035, compared to 2005 levels (California Air Resources Board 2018).

SB 743 (passed in 2013) requires revisions to the CEQA Guidelines that establish new impact analysis criteria for the assessment of a project’s transportation impacts. The intent behind SB 743 and revising the CEQA Guidelines is to integrate and better balance the needs of congestion management, infill development, active transportation, and GHG emissions reduction. The Governor’s Office of Planning and Research (OPR) recommends that vehicle miles traveled (VMT) serve as the primary analysis metric, replacing the existing criteria of delay and level of service. In 2018, OPR released a technical advisory outlining potential VMT significance thresholds for different project types. As of July 1, 2020, CEQA requires the use of VMT as well.

Short-Lived Climate Pollutants Reduction Strategy

SB 605 directed CARB, in coordination with other State agencies and local air districts, to develop a comprehensive Short-Lived Climate Pollutants (SLCP) Reduction Strategy. SB 1383 directed CARB to approve and implement the SLCP Reduction Strategy (noted below) to achieve the following reductions in SLCPs.

- 40 percent reduction in CH₄ below 2013 levels by 2030
- 40 percent reduction in HFC gases below 2013 levels by 2030
- 50 percent reduction in anthropogenic black carbon below 2013 levels by 2030

SB 1383 also establishes the following targets for reducing organic waste in landfills and methane emissions from dairy and livestock operations.

- 50 percent reduction in organic waste disposal from the 2014 level by 2020
- 75 percent reduction in organic waste disposal from the 2014 level by 2025
- 40 percent reduction in CH₄ emissions from livestock manure management operations and dairy manure management operations below the dairy sector's and livestock sector's 2013 levels by 2030

CARB adopted the SLCP Reduction Strategy in March 2017 as a framework for achieving the CH₄, HFC, and anthropogenic black carbon reduction targets set by SB 1383 (California Air Resources Board 2017b). The SLCP Reduction Strategy includes 10 measures to reduce SLCPs, which fit within a wide range of ongoing planning efforts throughout the state. CARB and CalRecycle are currently developing regulations to achieve these goals.

Regional and Local

Sacramento Air Quality Management District

As discussed in Section 3.2, *Air Quality*, the Sacramento Metropolitan Air Quality Management District (SMAQMD) is responsible for air quality planning in Sacramento County. SMAQMD has adopted a construction emissions threshold of 1,100 metric tons CO₂e and guidance for evaluating operational GHG emissions from land use development projects (Sacramento Metropolitan Air Quality Management District 2020; Ramboll 2020). The operational guidance identifies best management practices (BMPs) new development should implement to avoid conflicting with long-term State GHG reduction goals. These BMPs are consistent with guidance from other agencies, such as CARB (2019a) and OPR (2018), and include prohibiting natural gas infrastructure, ensuring projects are electric vehicle (EV) ready, and achieving VMT reductions consistent with SB 743 (Ramboll 2020).

Sacramento Area Council of Governments

As discussed in Section 3.2, *Air Quality*, SACOG is an association of local governments in the Sacramento region that provides transportation planning and funding for the region. The current 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS), which was adopted by SACOG on November 18, 2019, addresses CARB's per-capita GHG emissions reduction targets set under SB 375 (discussed above).

City of Sacramento

The City adopted a CAP on February 14, 2012. The CAP includes measures designed to reduce communitywide GHG emissions by 15 percent below 2005 levels by 2020, 38 percent below 2005 levels by 2030, and 83 percent below 2005 levels by 2050 (City of Sacramento 2012). The City is currently working on updating its CAP.

Environmental Setting

Global Climate Change

The process known as the *greenhouse effect* keeps the atmosphere near Earth's surface warm enough for the successful habitation of humans and other life forms. The greenhouse effect is created by sunlight that passes through the atmosphere. Some of the sunlight striking Earth is absorbed and converted to heat, which warms the surface. The surface emits a portion of this heat as infrared radiation, some of which is re-emitted toward the surface by GHGs. Human activities that generate GHGs increase the amount of infrared radiation absorbed by the atmosphere, thus enhancing the greenhouse effect and amplifying the warming of Earth.

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution (Intergovernmental Panel on Climate Change 2018). Rising atmospheric concentrations of GHGs in excess of natural levels result in increasing global surface temperatures—a process commonly referred to as *global warming*. Higher global surface temperatures, in turn, result in changes to Earth's climate system, including increased ocean temperature and acidity, reduced sea ice, variable precipitation, and increased frequency and intensity of extreme weather events (Intergovernmental Panel on Climate Change 2018). Large-scale changes to Earth's system are collectively referred to as *climate change*.

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC estimates that human-induced warming reached approximately 1 degree Celsius (°C) above pre-industrial levels in 2017, increasing at 0.2°C per decade. Under the current nationally determined contributions of mitigation from each country until 2030, global warming is expected to rise to 3°C by 2100, with warming to continue afterward (Intergovernmental Panel on Climate Change 2018). Large increases in global temperatures could have substantial adverse effects on the natural and human environments worldwide and in California.

Principal Greenhouse Gases

The principal anthropogenic (i.e., human-made) GHGs contributing to global warming are CO₂, CH₄, N₂O, and fluorinated compounds, including SF₆, HFCs, and PFCs. Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic sources. The primary GHGs of concern associated with the 2020 LRDP Update are CO₂, CH₄, N₂O, and HFCs (i.e., refrigerants). Principal characteristics of these pollutants are discussed in the following sections. Note that SF₆ and PFCs are not discussed because these gases are primarily generated by industrial and manufacturing processes, which are not anticipated as part of the project.

Methods have been set forth to describe GHGs emissions in terms of a single gas to simplify reporting and analysis. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined in IPCC reference documents. The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO₂e, which compares the gas in question to that of the same mass of CO₂ (CO₂ has a global warming potential of 1 by definition).

Table 3.7-1 lists the GWP of CO₂, CH₄, N₂O, and refrigerants used by the Sacramento Campus.

Table 3.7-1. Global Warming Potentials of Key Greenhouse Gases for the Sacramento Campus

Greenhouse Gas	Global Warming Potential (GWP) (100 years)
CO ₂	1
CH ₄	25
N ₂ O	298
R-143a	4,470
R-404A	3,900
R-410A	2,088
R-22	1,810

Sources: California Air Resources Board 2020a, 2020b.

CH₄ = methane; CO₂ = carbon dioxide; N₂O = nitrous oxide; R = refrigerant.

All GWPs used for CARB's GHG reporting and to assess attainment of the state's 2020 and 2030 reduction targets are considered over a 100-year timeframe (as shown in Table 3.7-1). However, CARB recognizes the importance of SLCP and reducing these emissions to achieve the state's overall climate change goals. SLCP have atmospheric lifetimes on the order of a few days to a few decades, and their relative climate forcing impacts, when measured in terms of how they heat the atmosphere, can be tens, hundreds, or even thousands of times greater than that of CO₂ (California Air Resources Board 2017b). Recognizing their short-term lifespan and warming impact, SLCP are measured in terms of CO₂e using a 20-year time period. The use of GWPs with a time horizon of 20 years or better captures the importance of SLCP and gives a better perspective on the speed at which emission controls will impact the atmosphere relative to CO₂ emission controls. The SLCP Reduction Strategy, which is discussed above, addresses CH₄, HFC, and anthropogenic black carbon. CH₄ has a lifetime of 12 years and a 20-year GWP of 72. HFC gases have lifetimes of 1.4 to 52 years and a 20-year GWP of 437 to 6,350. Anthropogenic black carbon has a lifetime of a few days to weeks and a 20-year GWP of 3,200 (California Air Resources Board 2017b).

Carbon Dioxide

CO₂ is the most important anthropogenic GHG and accounts for more than 80 percent of all GHG emissions emitted in California (California Air Resources Board 2020c). Its atmospheric lifetime ensures that atmospheric concentrations of CO₂ will remain elevated for decades even after mitigation efforts to reduce GHG concentrations are promulgated. CO₂ enters the atmosphere through fossil fuels (i.e., oil, natural gas, and coal) combustion, solid waste decomposition, plant and animal respiration, and chemical reactions (e.g., manufacture of cement). CO₂ is also removed from the atmosphere (or *sequestered*) when it is absorbed by plants as part of the biological carbon cycle.

Methane

CH₄, the main component of natural gas, is the second most abundant GHG and has a GWP of 25 (California Air Resources Board 2020a). Sources of anthropogenic emissions of CH₄ include growing rice, raising cattle, using natural gas, landfill outgassing, and mining coal. Certain land uses also function as both a source and sink for CH₄ (i.e., they remove CH₄ from the atmosphere). For example, wetlands are a terrestrial source of CH₄, whereas undisturbed, aerobic soils act as a CH₄ sink.

Nitrous Oxide

Anthropogenic sources of N₂O include agricultural processes (e.g., fertilizer application), nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. N₂O also is used in rocket engines, racecars, and as an aerosol spray propellant. Natural processes, such as nitrification and denitrification, can also produce N₂O, which can be released to the atmosphere by diffusion.

Hydrofluorocarbons

HFCs are human-made chemicals used in commercial, industrial, and consumer products and have high GWPs. HFCs are generally used as substitutes for ozone-depleting substances in automobile air conditioners and refrigerants. Within the transportation sector, HFCs from refrigeration and air conditioning units represent about 3 percent of total onroad emissions in California in 2017 (California Air Resources Board 2019b).

Emissions Inventories

A GHG inventory is a quantification of all GHG emissions and sinks² within a selected physical and/or economic boundary. GHG inventories can be performed on a large scale (e.g., for global and national entities) or on a small scale (e.g., for a building or person). Table 3.7-2 outlines the most recent global, national, statewide, and local GHG inventories.

Table 3.7-2. Global, National, State, and Local GHG Emissions Inventories

Emissions Inventory	CO ₂ e (metric tons)
2010 Global GHG Emissions Inventory	52,000,000,000
2018 National GHG Emissions Inventory	6,677,800,000
2017 State GHG Emissions Inventory	424,100,000
2016 City of Sacramento GHG Emissions Inventory	3,424,728

Sources: Intergovernmental Panel on Climate Change 2014; U.S. Environmental Protection Agency 2020a; California Air Resources Board 2020c; Rincon 2020.

CO₂e = carbon dioxide equivalent.

As shown in Table 3.7-2, California produces about 1 percent of the entire world's GHG emissions and 6 percent of the nation's GHG emissions, with major emitting sources including fossil fuel consumption from transportation (41 percent), industry (24 percent), electricity production (15 percent), agricultural and forestry (8 percent), residential (7 percent), and commercial (5 percent) (California Air Resources Board 2020c). As discussed above, the California government has put in place programs and legislation to reduce GHG emissions across all sectors of the economy.

Like the federal and state governments, the Sacramento Campus conducts annual GHG inventories to assess their progress in reducing emissions and meeting their climate change goals. The campus categorizes their emissions into "scopes," and pursuant to the Sustainable Practices Policy, defines Scope 1 and 2 sources per the Climate Registry (2016) and Scope 3 sources per Second Nature (2012). The scope definitions are organized around the locational and operational control of emission sources, as shown below. UC Davis Sacramento emissions by scope type are provided in Table 3.7-3.

² A GHG sink is a process, activity, or mechanism that removes a GHG from the atmosphere.

- **Scope 1:** All direct GHG emissions (except for direct CO₂ emissions from biogenic sources) from sources controlled by UC Davis (Climate Registry 2016).
- **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 Davis (Climate Registry 2016).
- **Scope 3:** Emissions from sources that are not owned or controlled by UC Davis, but that are central to campus operations or activities (e.g., non-fleet transportation, employee/student commuting, air travel paid for by the institution) (Second Nature 2012).

Table 3.7-3. Sacramento Campus Greenhouse Gas Emissions Sources by Scope

Scope	Types of GHG Emissions
Scope 1	<ul style="list-style-type: none"> • Stationary combustion—Onsite boilers, turbines, generators, and other fossil-fuel powered equipment • Mobile combustion—Fleet Services vehicles, campus shuttles, and off-road agricultural and grounds maintenance equipment • Fugitive emissions—Refrigerant usage in chillers, HVAC systems, and vehicles; research gases; and distribution losses in natural gas lines and meters
Scope 2	<ul style="list-style-type: none"> • Purchased electricity—Electricity purchased from PG&E and SMUD for campus and leased spaces • Purchased gas—Natural gas purchased from PG&E for campus and leased spaces
Scope 3 ^a	<ul style="list-style-type: none"> • Commuting—Passenger vehicle trips, truck trips, air travel, and non-campus owned transit trips • Business air travel—UC Davis sponsored air travel by faculty and staff • Solid waste generation^b—Decomposition of campus-generated waste in local and regional landfills not owned by UC Davis • Water and wastewater use^b—Treatment, distribution, and conveyance of campus water and wastewater using infrastructure not owned by UC Davis • Construction^b—Electricity consumption and equipment and vehicles used to construct campus buildings and facilities
Non-Scope	<ul style="list-style-type: none"> • P3^c—All Scope 1, 2, and 3 emissions from on-campus developments operated under a P3

HVAC = heating, ventilation and air conditioning; P3 = public private partnership; PG&E = Pacific Gas and Electric; SMUD = Sacramento Municipal Utility District.

^a The annual Sacramento Campus GHG inventories are submitted and verified by the Climate Registry. These inventories exclude Scope 3 emissions. For the purposes of the CEQA analysis, this EIR evaluates the potential emissions associated with Scope 3 sources, as discussed further in Section 3.7.2, Environmental Impacts.

^b Indirect waste and water-related emissions, as well as emissions generated by construction activities, are not included in Second Nature's (2012) definition of Scope 3 sources. Accordingly, these emissions are not covered by University Carbon Neutrality Initiative, which requires Scope 3 emissions from commuting be offset to net zero by 2050. However, for the purposes of the CEQA analysis, consistent with SMAQMD (2020) guidance, this EIR evaluates GHG emissions generated by construction activities under the 2020 LRDP Update, as well as indirect emissions resulting from solid waste generation and water and wastewater use by campus buildings.

^c The annual Sacramento Campus GHG inventories exclude emissions from on-campus developments operated under a P3. For the purposes of the CEQA analysis, this EIR evaluates the potential emissions associated with these developments.

Table 3.7-4 summarizes UC Davis' verified GHG inventories for the Sacramento Campus by scope for the from 2012 to 2017. As noted above, annual Sacramento Campus GHG inventories are submitted and verified by the Climate Registry. These inventories exclude Scope 3 emissions as well as emissions from on-campus developments operated under a public private partnership (P3).

Accordingly, the inventories shown in Table 3.7-4 only include Scope 1 and 2 emissions (as defined in Table 3.7-2).

Table 3.7-4. Sacramento Campus Verified Greenhouse Gas Emissions (Scope 1 and 2) between 2013 and 2017 (metric tons CO₂e per year)

Scope/Source	2013	2014	2015	2016	2017
Scope 1					
Stationary	64,000	62,951	64,583	64,710	65,570
Mobile	615	789	425	505	654
Fugitive ^a	34	156	308	197	46
Scope 2					
Purchased electricity/gas	5,438	5,348	4,841	3,510	2,901
Allowable Offsets					
CARB allowances ^b	-3,781	-3,712	-3,803	-3,799	-3,834
Total Scope 1 and 2	66,306	65,532	66,354	65,123	65,337

Source: Lee pers. comm.

^a Per guidance from the Climate Registry, UC Davis' verified inventories exclude emissions of R-22, which are being phased out under the Montreal Protocol.

^b As noted above under *Regulatory Setting*, all subject UC campuses, including the Sacramento Campus, receive allowances in exchange for a financial commitment to combat climate change through university actions. The campus acquires California Carbon Offsets to offset up to 8 percent (i.e., the maximum allowed in the cap-and-trade program) of cap-and-trade subject emissions.

3.7.2 Environmental Impacts

This section describes the environmental impacts associated with greenhouse gas emissions that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

The CEQA Guidelines require lead agencies make a good-faith effort, based on available information, to estimate the quantity of GHG emissions that would be generated by a proposed project, including the emissions associated with construction activities and operational emissions (i.e., stationary sources, vehicular traffic, and energy consumption). The guidelines also require that lead agencies determine whether these impacts have the potential to result in a project or cumulative impact, and to mitigate impacts where feasible mitigation is available per CEQA Guidelines Section 15064.4.

GHG emissions resulting from implementation of the 2020 LRDP Update were quantified using standard and accepted software tools, techniques, and emission factors as described in detail below. A full list of assumptions and model outputs can be found in Appendix D.

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 SMAQMD (2020). Modeling was

based on project-specific information (e.g., land use types, construction schedule, building sizes), where available, CalEEMod default values, and reasonable assumptions based on typical construction activities. Construction GHG emissions would originate from off-road equipment exhaust and vehicle exhaust (on-road vehicles)³. Both sources were considered in the 2020 LRDP Update construction analysis and CalEEMod modeling. The analysis also accounts for GHG emissions generated by potential electricity consumption during construction.

GHG emissions generated by near-term construction projects that would occur under the 2020 LRDP Update between 2020 and 2030 were quantified using CalEEMod defaults for the project sizes and land use types. Table 3.2-5 in Section 3.2, *Air Quality*, summarizes the near-term construction projects included in the modeling. The analysis also conservatively includes five projects that will be developed under the 2020 LRDP Update that have or are currently undergoing environmental review through a separate project-specific CEQA document (listed as “Cumulative Projects” in Table 3.2-5). Construction GHG emissions from Aggie Square Phase I were quantified using project-specific construction details, as described further in Volume 2. Construction GHG emissions from all other “Cumulative Projects” were obtained from their project-specific CEQA documents. These emissions were added to the combined results of the CalEEMod runs for other 2020 LRDP Update construction activities.

As described in Section 3.2, *Air Quality*, and Appendix C, the timing of specific construction projects beyond 2030 is not currently known. While a certain amount of construction is likely to occur annually through 2040, the remaining development square footage was amortized over 4 years to present a worst-case and conservative assessment of the potential maximum annual construction emissions that could theoretically occur under the 2020 LRDP Update. This approach assumes that one-quarter of the total development beyond 2030 could occur in a single year. For the purposes of analysis, emissions generated by this construction were modeled in 2031, corresponding to the year with the highest emission factors for equipment and vehicles. A second analysis was conducted to estimate total GHG emissions generated over a full 10-year build period, where the remaining development through 2040 was amortized over 10 years and modeled annually. This assumption was made to quantify the highest amount of total emissions that could occur should construction occur daily over an entire 10-year period. Table 3.2-6 in Section 3.2, *Air Quality*, summarizes the expected development potential for implementation of the 2020 LRDP Update beyond 2030 through 2040 and shows the worst-case and average annual land use assumptions used in the modeling. See also Appendix C.

GHG emissions generated by electricity used to power onsite contractor trailers and electric equipment were quantified assuming 10 megawatts-hours (MWh) of electricity would be consumed annually by construction activities, exclusive of Aggie Square Phase I. Construction of Aggie Square Phase I would consume 18,036 MWh (Aubert pers. comm.). Emission factors for electricity consumption were calculated using data from SMAQMD and the EPA and account for increases in the renewable energy mix due to the RPS and SB 350 (Ramboll 2020; U.S. Environmental Protection Agency 2020b).

³ Implementation of the 2020 LRDP Update will require removal of existing trees and vegetated areas. However, the 2020 LRDP Update requires “at least no net loss of trees.” Accordingly, there would be no net change in long-term biogenic emissions from stored carbon and annual sequestration. Rather, cumulative sequestration may increase with the 2020 LRDP Update as additional open space and landscaped buffers will be created (see Appendix C).

Existing (2019)⁴ Operational GHG Inventory

Existing UC Davis owned and operated buildings and processes on the Sacramento Campus generate GHG emissions. Emissions result from mobile sources (e.g., campus fleet), stationary sources (e.g., equipment at the Central Energy Plant), area sources (e.g., landscaping equipment), energy sources (e.g., purchased natural gas and electricity), fugitive sources (e.g., refrigerants), water and wastewater use, and solid waste generation. GHG emissions generated by these sources were calculated using a variety of models and reports, as described below. The analysis also accounts for operational GHG emissions generated by existing P3 facilities (i.e., Courtyard by Marriott and Ronald McDonald House). Section 3.2, *Air Quality* provides additional detail where the GHG analysis method is the same as the criteria pollutant analysis method.

Mobile Sources

Mobile sources include campus fleet vehicles, medical helicopters, vehicle trips made by employees, students, and patients (including deliveries), and UC Davis sponsored air travel by faculty and staff. Each of these sources was considered in the mobile source inventory for the 2020 LRDP Update, as described below.

Campus fleet vehicles include Med-Transit Shuttle and all fleet services vehicles, including light-duty cars and trucks, passenger and cargo vans, and heavy trucks. GHG emissions generated by campus fleet vehicles were quantified using emission factors from CARB's EMFAC2017 database and VMT data provided by UC Davis (Kirk pers. comm. [a]), as described further in Section 3.2, *Air Quality*, Section 3.72, Environmental Impacts.

REACH Air Medical Services provides medical helicopter transport services to the Sacramento Campus. The number of existing helicopter landings and departures at the Medical Center Tower II Heliport were provided by UC Davis (Davis pers. comm.]). Jet fuel consumption per landing and take-off (LTO) cycle for a Eurocopter EC135, which is the type of helicopter operated by REACH Air Medical Services, was obtained from the Federal Office of Civil Aviation (FOCA) (2015). This factor was applied to the LTO inventory provided by UC Davis to quantify total annual helicopter fuel use.⁵ Resulting GHG emissions were calculated by multiplying the total annual jet fuel consumption by emission factors from the Climate Registry (2019).

Vehicle trips made by employees, students, and patients commuting to the Sacramento Campus generate GHG emissions as vehicle exhaust. GHG emissions generated by these vehicle trips were quantified using emission factors from CARB's EMFAC2017 database and vehicle data provided by Fehr & Peers (Hananouchi pers. comm.), as described further in Section 3.2, *Air Quality*.

⁴ Where available, data for 2019 were used to quantify existing operational emissions. For some sources, records for 2019 were not available at the time of the analysis, and as such, data for 2018 were used. Because no major buildings or sources were constructed between 2018 and 2019, the 2018 data are considered the most accurate information currently available to estimate GHG emissions for those sources for which 2019 data had not yet been released.

⁵ Because the medical transport service is operated by a third party (REACH Air Medical Services), activity and thus fuel consumption and emissions occurring outside of the LTO cycle at the Medical Center Tower II Heliport are beyond the control of UC Davis. Moreover, helicopter flight patterns and cruising operations are dictated by emergency situations, which cannot be known or predicted. Accordingly, these emissions are not included in the analysis for the 2020 LRDP Update. Similarly, emissions from student and employee air travel are not included in the 2020 LRDP Update CEQA analysis as these activities are beyond the direct regulatory authority of UC Davis.

UC Davis' CAP includes a 1990 inventory of GHG emissions from air travel by UC Davis staff affiliated with the Davis and Sacramento Campuses. These emissions were appropriated to the Sacramento Campus based on historical employee populations for the Davis and Sacramento Campuses (University of California Davis 2018; Kirk pers. comm. [b]). Emissions for the Sacramento Campus were then extrapolated to 2019 based on employment growth for the campus. This approach is conservative because it holds the emissions intensity of aircraft travel constant at 1990 levels. Therefore, it does not account for improvements in aircraft efficiency that may reduce associated travel emissions.

Stationary Sources

The Central Energy Plant provides normal and emergency electrical power, chilled and hot water for heating and cooling, and process steam to most campus buildings. The Central Energy Plant uses natural gas provided by PG&E. Existing stationary sources at the Central Energy Plant that generate GHG emissions include five diesel emergency generators, five steam boilers and eight hot water boilers, and one gas turbine. Two diesel emergency generators are also currently maintained at the Facilities Support Services Building (FSSB) and Administrative Support Building (ASB). Existing annual fuel consumption for each of these sources was obtained from UC Davis' 2018 Emissions Inventory Verification Statement (UC Davis Health 2019). Resulting GHG emissions were quantified by multiplying the annual fuel consumption by emission factors from the Climate Registry (2019).

Area Sources

CalEEMod was used to estimate landscaping GHG emissions generated by existing Sacramento Campus land uses. CalEEMod default values for the existing land use types and building square footages were assumed. Refer to Appendix C, for a summary of the existing building inventory for the Sacramento Campus, and to Appendix D for the specific air quality land use modeling assumptions.

Energy Sources

Building energy use results in direct and indirect GHG emissions from natural gas and electricity consumption. Buildings not connected to the Central Energy Plant directly purchase natural gas from PG&E. UC Davis provided existing PG&E fuel consumption records for these buildings (Olaguez pers. comm.). GHG emissions generated by the combustion of this gas were calculated by multiplying the purchased therms by natural gas emission factors from the Climate Registry (2019).

The Central Energy Plant normally operates to follow the electrical load of the campus with a small amount of power continuously exported to SMUD. However, in the event of a normal or forced outage of the gas turbine, the entire campus load is served by a SMUD utility power import. Several other buildings on campus also purchase minor amounts of electricity from SMUD or PG&E. UC Davis provided existing SMUD and PG&E electricity consumption records for these buildings and the Central Energy Plant (Kirk pers. comm. [a], [c]). GHG emissions generated by purchased electricity were quantified by multiplying annual kWh by emission factors calculated using data from PG&E, SMAQMD, and EPA (Pacific Gas and Electric Company 2019; Ramboll 2020; U.S. Environmental Protection Agency 2020b).

Fugitive Sources

Fugitive GHG sources include refrigeration and air conditioning equipment, which can leak high GWP compounds during normal use, and UC Davis owned and operated natural gas transmission and distribution (T&D) infrastructure. High GWP compounds, including R-134a, R404-A, and R-22 are used in refrigeration, air conditioners (ACs) (including those in campus fleet vehicles), and chillers throughout the Sacramento Campus. Transmitting and distributing natural gas can result in CH₄ losses, as well generation of minor amounts of CO₂ through oxidation.

Leakage of high GWP compounds from the operation of refrigeration and air conditioning equipment were quantified based on refrigeration service records provided by UC Davis (Olaguez pers. comm.).⁶ The record included the type and weight (in pounds) of refrigerant added to each piece of equipment. It was assumed the full amount of added refrigerant in 2019 was equal to the amount of refrigerant leaked that year. CH₄ and CO₂ emissions from natural gas T&D infrastructure were obtained from UC Davis' verified Climate Registry GHG inventory (Kirk pers. comm. [d]).

Water and Wastewater Use

CalEEMod was used to estimate GHG emissions resulting from water and wastewater use by existing Sacramento Campus buildings, including the Central Energy Plant. UC Davis provided existing water consumption records (Mendonsa pers. comm.), which were input into CalEEMod. The default ratio of indoor to outdoor water usage from CalEEMod was assumed, unless the end use was unknown (e.g., all Central Energy Plant water consumption was assumed to be treated and considered "indoor" water use).

Solid Waste Generation

CalEEMod was used to estimate GHG emissions resulting from solid waste generated by existing Sacramento Campus buildings. UC Davis provided the annual tonnage of existing landfilled solid waste (Ocheltree pers. comm.), which was input into CalEEMod. Model defaults for regional landfill characteristics were assumed.

P3 Facilities

CalEEMod was used to estimate operational GHG emissions generated by the existing P3 facilities on the Sacramento Campus, as described further in Section 3.2, *Air Quality*.

2030 and 2040 LRDP Operational GHG Forecasts

Implementation of the 2020 LRDP Update would result in new and modified sources of GHG emissions. For the purposes of the CEQA analysis, GHG emissions were quantified under near-term build conditions in 2030, which corresponds to the year for the next legislatively adopted GHG target (SB 32), and in 2040. Both operational analyses quantify emissions generated by the additional growth proposed under the 2020 LRDP Update, as well as emissions from existing sources expected to remain in service through 2030 and 2040. GHG emissions generated by these

⁶ Emissions of high GWP compounds from refrigeration and air conditioning equipment can also result from manufacturing (including equipment charging) and through equipment disposal. These upstream (i.e., manufacturing) and downstream (i.e., recycling) emissions, otherwise known as "lifecycle emissions," are not included in the 2020 LRDP Update analysis, consistent with guidance from the California Natural Resources Agency (2018).

sources under future build conditions were calculated using similar methods as the existing GHG inventory, as described further below. Table 3.7-5 summarizes the analysis methods for both the existing and full build operational emissions scenarios.

Table 3.7-5. Operational GHG Analysis Methodology

Source	Existing (2019)	Build (2030 and 2040)
Mobile—Campus Fleet	2019 emission factors from EMFAC2017 applied to existing campus fleet traffic data from UC Davis.	Campus fleet assumed to grow by one gasoline vehicle per year and one diesel vehicle every 5 years. 2030 and 2040 EMFAC2017 emission factors applied to projected 2030 and 2040 campus fleet traffic data, respectively.
Mobile—Helicopters	FOCA fuel use factors and Climate Registry emission factors applied to existing helicopter LTO.	Growth in hospital sf applied to existing helicopter emissions.
Mobile—Commute Trips	2019 emission factors from EMFAC2017 applied to existing commute VMT from Fehr & Peers.	2030 and 2040 emission factors from EMFAC2017 applied to projected 2030 and 2040 commute VMT from Fehr & Peers, respectively.
Mobile—Air Travel	Growth in employee population applied to 1990 business air travel emissions reported in UC Davis' CAP.	Growth in employee population applied to existing business air travel emissions.
Stationary—Generators	Climate Registry emission factors applied to equipment fuel consumption from UC Davis 2018 Emissions Inventory Verification Statement.	No change in the operating conditions for the seven existing generators; emissions obtained from the existing inventory. Assumes one new 4,036 HP diesel generator at the Davis Hospital Tower and one new 3,451 HP diesel generator at the Central Energy Plant. Emissions from the generators quantified using emission factors from CalEEMod.
Stationary—Boilers and Turbine		Growth in campus electric power load would require a 10 and 11% increase in natural gas use under 2030 and 2040 conditions, respectively. Existing natural gas emissions were multiplied by 1.10 and 1.11 to estimate 2030 and 2040 emissions, respectively.
Area—Landscape Equipment	CalEEMod area source defaults for existing land use types and building sf.	CalEEMod area source defaults for future land use types and building square footages.
Energy—Purchased Gas	Climate Registry emission factors applied to existing purchased gas from PG&E.	Purchased gas consumed by existing facilities that will be demolished were removed from the analysis. No change in gas consumption from buildings that remain in service through 2030 and 2040; emissions obtained from the existing inventory.
Energy—Purchased Electricity	Utility emission factors applied to existing purchased electricity from SMUD and PG&E.	Zero GHG emissions generated by purchased electricity under 2030 and 2040 build conditions pursuant to the UC Sustainable Practices Policy, which requires 100% clean electricity.

Source	Existing (2019)	Build (2030 and 2040)
Fugitive—Refrigeration and Air Conditioning Equipment	Refrigerant emissions obtained from UC Davis refrigeration service records.	Growth in building sf among those building types with existing refrigeration equipment applied to existing emissions. Growth in campus fleet vehicles applied to existing vehicle AC emissions. Assumes one new 2,000-ton chiller at the Central Energy Plant.
Fugitive—T&D Infrastructure	UC Davis verified emission factors applied to the number of existing gas meters and lineal feet of piping.	No additional lineal feet of piping; emissions obtained from the existing inventory. UC Davis verified emission factors applied to the number of future expected gas meters.
Water and Wastewater Use	CalEEMod based on existing water and wastewater usage (gallons).	Growth in campus population applied to existing water and wastewater usage. Emissions modeled in CalEEMod.
Solid Waste Generation	CalEEMod based on existing solid waste generation (tons).	Growth in campus population applied to existing solid waste generation. Emissions modeled in CalEEMod.
P3—Mobile, Area, Energy, etc.	CalEEMod defaults and 2019 emission factors for existing P3 land use types and building square footages.	CalEEMod defaults and 2030 and 2040 emission factors existing P3 facilities (i.e., Courtyard by Marriot and Ronald McDonald House). See Volume 2 details on Aggie Square Phase I. Emissions from the Rehabilitation Hospital obtained from its project specific CEQA document. Emissions for Aggie Square Phase II development modeled using CalEEMod.

P3 = private public partnership; sf = square feet; VMT = vehicle miles traveled; HP = horsepower; LTO = landing take off cycle.

Mobile Sources

As discussed in Section 3.2, *Air Quality*, it was assumed that one additional gasoline vehicle would be purchased per year and one additional diesel vehicle would be purchased every 5 years (Tremblay pers. comm.). The existing gasoline and diesel fleet and associated VMT were assumed to remain constant in the future. This approach is conservative because it is likely some of the existing gasoline and diesel vehicles would be replaced by electric vehicles over time. Likewise, at least 50 percent of new vehicles purchased by the campus must be electric instead of gasoline or diesel, per the UC Sustainable Practices Policy. However, without specific procurement details (fuel type displaced), the penetration of specific future electric vehicles is unknown, and thus emissions benefits were not included in the analysis. Emission factors based on aggregated-speed emission rates for the campus fleet vehicle types were obtained from CARB's EMFAC2017 database. CARB's (2020d) SAFE Vehicles Rule adjustment factors were applied to the emission factors for gasoline-powered vehicles. GHG emissions generated by campus fleet vehicles were quantified by multiplying the EMFAC2017 emission factors by the projected 2030 and 2040 VMT for the campus fleet.

Future helicopter landings at the Medical Center Tower II Heliport were assumed to increase commensurate with growth in hospital gross square feet (gsf) on the Sacramento Campus. This approach is conservative because it assumes all future hospital uses would influence medical helicopter transport. Because helicopters are primarily used to transport patients in critical condition, it is more likely only growth among emergency and critical care services would increase

helicopter activity. While the amount of future hospital building gsf is known for the 2020 LRDP Update (refer to Appendix C), the exact increase in square footage that will be dedicated to emergency and critical care services is not. GHG emissions generated by future helicopter activity were therefore conservatively quantified by multiplying existing helicopter emissions by the expected growth in total hospital gsf with implementation of the 2020 LRDP Update.

Future expected vehicle trips and VMT with 2030 and 2040 projections of implementation of the 2020 LRDP Update were provided by Fehr & Peers (Hananouchi pers. comm.). CARB's EMFAC2017 data were used to obtain 2030 and 2040 emission factors based on aggregated-speed emission rates for all vehicle types operating in Sacramento County. CARB's (2020d) SAFE Rule adjustment factors were applied to the emission factors for gasoline-powered vehicles. GHG emissions generated by commute and delivery vehicle trips were quantified by multiplying the EMFAC2017 emission factors by the 2030 and 2040 vehicle trip and VMT inventories provided by Fehr & Peers.

Existing business air travel emissions for the Sacramento campus were extrapolated to 2030 and 2040 based on employment growth for the campus. This approach is conservative because it holds the emissions intensity of aircraft travel constant. Therefore, it does not account for improvements in aircraft efficiency that may reduce future travel emissions.

Stationary Sources

UC Davis' *Utility Master Plan* (UMP) analyzes major utilities and their ability to serve the Sacramento Campus considering projected future growth (Affiliated Engineers, Inc. 2019). As discussed in Section 3.2, *Air Quality*, the UMP is consistent with the anticipated growth in gsf to be served by the Central Energy Plant with implementation of the 2020 LRDP Update.⁷ Accordingly, assumptions for future Central Energy Plant operations with implementation of the 2020 LRDP Update are based, in part, on the UMP. UC Davis staff were also consulted on appropriate growth assumptions, as described below.

As discussed in Section 3.2, *Air Quality*, all existing fossil fuel powered stationary equipment at the Central Energy Plant would be maintained and continue to operate with implementation of the 2020 LRDP Update, per the UMP (Affiliated Engineers, Inc. 2019). GHG emissions generated by the existing generators that would continue to operate at the Central Energy Plant were obtained from the existing emissions inventory, as described above. A new 3-megawatt (3,451 horsepower) Tier 3 emergency diesel generator would be installed following completion of the Replacement Hospital Tower. Emissions generated by this generator were estimated using emission factors from CalEEMod, as reported in the CalEEMod User Guide (Trinity Consultants 2017).

The UMP indicates that electric power load served by the Central Energy Plant is projected to grow from 17.2 megawatts under existing conditions to 19.4 megawatts with implementation of the 2020 LRDP Update (growth of 2.2 megawatts). This projection accounts for energy benefits achieved by demand-side load reduction measures, pursuant to the UC Sustainable Practices Policy. As discussed in Section 3.2, *Air Quality*, additional natural gas consumed to serve this load is proportional to the heat input to the turbine. UC Davis engineers project a 10 and 11 percent increase in natural gas consumption at the Central Energy Plant under 2030 and 2040 build conditions, respectively, to

⁷ The UMP assumed the additional 1.8 million gsf would be added by 2030, whereas the 2020 LRDP Update projects growth through 2040. While growth is projected to occur more slowly under the 2020 LRDP Update than the UMP, the total gsf served by the Central Energy Plant, and thus electrical demand, is the same between the two plans.

serve the additional electric power load associated with implementation of the 2020 LRDP Update (Musat pers. comm. [a]). Future emissions were therefore calculated by scaling existing emissions from the turbines and turbine by factors of 1.10 and 1.11.

Like existing stationary source equipment at the Central Energy Plant, the emergency diesel generators at the FSSB and ASB would continue to operate with implementation of the 2020 LRDP Update. GHG emissions generated by these existing generators were obtained from the existing emission inventory, as described above. UC Davis will install one new 4,036 horsepower Tier 2 emergency diesel generator at the Davis Tower. Emissions generated by this generator were estimated using emission factors from CalEEMod, as reported in the CalEEMod User Guide (Trinity Consultants 2017). Based on runtime logs for the existing generators at the FSSB and ASB, it was assumed the new Davis Tower generator would operate 12 hours per year (University of California, Davis 2019).

Area Sources

CalEEMod default values for the future projected land use types and building square footages were used to estimate landscaping equipment emissions with implementation of the 2020 LRDP Update. Refer to Appendix C for a summary of the future building inventory for the Sacramento Campus and to Appendix D for the specific air quality land use modeling assumptions.

Energy Sources

Per the UC Sustainable Practices Policy, there would be no new buildings (other than the Rehabilitation Hospital, which is discussed below under P3 Facilities) constructed under the 2020 LRDP Update that would purchase natural gas from PG&E for space or water heating or electricity from SMUD or PG&E. The amount of existing buildings not served by the Central Energy Plant and purchasing natural gas were assumed to remain the same as under existing conditions, unless a building is planned to be demolished.⁸ This assumption is conservative as several of these existing buildings may undergo future renovation, which could improve their energy efficiency; per the UC Sustainable Practices Policy, “major renovations” must achieve USGC LEED Silver certification. Acute care facilities and medical office buildings undertaking “major renovations” must outperform ASHRAE 90.1-2010 by 30 percent. However, without details on the specific renovations to occur and whether they would be classified as major, it is unknown to what extent existing purchased natural gas and electricity consumption at these facilities may be reduced.

GHG emissions resulting from purchased natural gas were obtained from the existing inventory and held constant for the future build analyses (since there would be no change in consumption or emission factors). While electricity would continue to be purchased by existing facilities including the Central Energy Plant, pursuant to the UC Sustainable Practices Policy, the Sacramento Campus is required to obtain 100 percent clean electricity from SMUD and PG&E beginning in 2025. Accordingly, there would be zero GHG emissions generated by purchased electricity under 2030 and 2040 build conditions.

⁸ Natural gas is purchased from PG&E for the Cypress Building and East Wing of the main hospital, which will both be demolished (see Table 3.7-4 in Section 3.2, *Air Quality*). Because the Cypress Building and East Wing will not be operational in 2030 or 2040, natural gas consumption for the buildings was removed from the forecasts.

Fugitive Sources

The types and number of refrigeration and air conditioning equipment that may be installed under the 2020 LRDP Update is not currently known, except for a new 2,000-ton chiller at the Central Energy Plant following completion of the Replacement Hospital Tower (Affiliated Engineers, Inc. 2019). The new chiller was conservatively assumed to use R-134a, which is used in the existing Central Energy Plant chillers. The average annual leak rate of the four existing chillers (1.7 percent) was considered representative of the new chiller and used to estimate future R-134a losses.

Outside of the Central Energy Plant, refrigeration equipment is currently found in the main hospital, medical and general office buildings, and research and development (R&D) facilities. HVAC units are in buildings throughout the campus and are repaired at the onsite AC Shop. AC units in campus fleet vehicles also represent an existing source of high GWP gases. It is reasonable to assume that some amount of equipment using high GWP gases will be installed among future buildings with similar land use designations as under existing conditions. High GWP gases from refrigeration equipment with implementation of the 2020 LRDP Update were calculated by scaling existing emissions by the anticipated growth in hospital, medical and general office, and R&D gsf. This approach is conservative because it assumes all future buildings within these land use designations will have refrigeration equipment that uses a high GWP refrigerant. The growth in total building gsf was used to forecast future high GWP gas emissions from future HVAC units. High GWP gases from campus fleet AC units were assumed to increase proportional to the campus fleet. Accordingly, high GWP gas emissions from campus fleet AC units with implementation of the 2020 LRDP Update were calculated by scaling existing emissions by the anticipated growth in fleet vehicles.

No new natural gas T&D piping is required for implementation of the 2020 LRDP Update (Affiliated Engineers, Inc. 2019). Accordingly, CH₄ and CO₂ emissions from natural gas T&D piping were assumed to remain the same as under existing conditions. One new natural gas meter would be installed following completion of the Replacement Hospital Tower (Musat pers. comm. [b]). CH₄ emissions associated with the new gas meter were quantified using verified emissions factors from UC Davis' annual GHG inventory (Kirk pers. comm. [d]).

Water and Wastewater Use

Building water and wastewater use were assumed to increase commensurate with growth in Sacramento Campus population. Forecasting water consumption based on population growth is a common method used to project future water sector GHG emissions (Association of Environmental Professionals 2012). This approach is conservative because it assumes a constant per capita water use rate. Accordingly, it does not account for the UC Sustainable Practices Policy, which requires UC locations achieve a 36 percent reduction in potable water consumption, compared to a 3-year historic baseline. New buildings constructed under the 2020 LRDP Update will also likely be more water efficient than buildings under existing conditions due to LEED certification requirements of the UC Sustainable Practices Policy. However, because specific water reduction strategies are not known for all future development, water and wastewater use with implementation of the 2020 LRDP Update were forecasted based on existing consumption rates to avoid underreporting potential emissions, which were modeled in CalEEMod.

Solid Waste Generation

Solid waste generation was assumed to increase commensurate with growth in Sacramento Campus population. Forecasting waste generation based on population growth is a common method used to

project future waste sector GHG emissions (Association of Environmental Professionals 2012). This approach is conservative because it assumes a constant per capita waste generation rate. UC Davis has a zero-waste goal, but this only applies to locations other than medical centers. However, the UC Sustainable Practices Policy requires waste reduction and recycling measures to be prioritized in LEED credits for new projects. The Sacramento Campus may therefore achieve a higher rate of per capita soil waste diversion over time compared to existing conditions. However, because specific waste reduction and recycling strategies are not known for all future development, landfilled solid waste generation with implementation of the 2020 LRDP Update was forecasted based on the existing generation rate to avoid underreporting potential emissions, which were modeled in CalEEMod.

P3 Facilities

Operation of the existing Courtyard by Marriott and Ronald McDonald House was assumed to continue with implementation of the 2020 LRDP Update. CalEEMod defaults were used to estimate future 2030 and 2040 non-mobile source operational GHG emissions generated by these facilities. Mobile source emissions were quantified using EMFAC2017 and vehicle data from Fehr & Peers (Hananouchi pers. comm.).

Three new P3 facilities are assumed to be operational by 2030: Aggie Square Phase I, Rehabilitation Hospital, and Aggie Square Phase II. All P3 facilities are subject to the UC Sustainable Practices Policy. GHG emissions generated by Aggie Square Phase I in 2030 and 2040 were calculated using the methods and data described in Volume 2. Operational calculations and model inputs for the Rehabilitation Hospital, including natural gas combustion by onsite boilers,⁹ were revised and re-ran with 2030 and 2040 emissions rates. Non-mobile source emissions generated by Aggie Square Phase II were modeled in CalEEMod based on the expected land use types and building square footages. Pursuant to the UC Sustainable Practices Policy, Aggie Square Phase II would be designed and constructed without natural gas infrastructure (except for commercial cooking). Accordingly, natural gas consumption for non-commercial gas consumption was set to zero and electricity consumption for the all-electric design was scaled from Aggie Square Phase I. Anticipated waste generation for Aggie Square Phase II was also based on UC Davis-specific data (Ocheltree pers. comm.). Mobile source emissions were quantified using EMFAC2017 and vehicle data from Fehr & Peers (Hananouchi pers. comm.).

1990 Sacramento Campus GHG Inventory

As discussed above, UC Davis' CAP includes a 1990 GHG inventory for the Sacramento Campus. The CAP focuses on emissions from direct campus operations, rather than commuting and other indirect sources, such as water and wastewater use, solid waste generation, and landscaping equipment. This is because UC Davis does not report these emissions in their verified inventories, as these emissions are not requested by the GHG inventory registry that UC campuses use. Therefore, limited emissions data are presented in the UC Davis CAP for water and wastewater use, solid waste generation, and landscaping equipment.

⁹ The formation of the Joint Venture for the Rehabilitation Hospital was approved by the Regents prior to the July 2019 trigger date for III.A.3. in the current UC Sustainable Practices Policy that requires no onsite fossil fuel combustion for space and water heating. However, the project will comply with all other aspects of the UC Sustainable Practices Policy.

The UC Davis CAP established the 1990 emissions level for the Sacramento Campus at 20,335 metric tons of CO₂e for Scopes 1 and 2 emission sources. Scope 3 emissions from commuting totaled 13,407 metric tons of CO₂e in 1990. Based on the total business air travel emissions reported in the UC Davis CAP and historical population data for the Davis and Sacramento campuses, 1990 air travel emissions (also Scope 3) for the Sacramento Campus are estimated at 1,493 metric tons of CO₂e. Emissions from water and wastewater use, solid waste generation, and landscaping equipment were not quantified in the UC Davis CAP and are therefore not included in the associated 1990 inventory. Because these sources are part of the statewide emissions inventory and future reduction planning framework, and are also quantified and assessed for implementation of the 2020 LRDP Update (as described above), the 1990 inventory for the Sacramento Campus was updated to include emissions from water and wastewater use, solid waste generation, and landscaping equipment. An updated assessment of emissions from commuting was also performed, as discussed below.

Emissions resulting from water and wastewater use, solid waste generation, and landscaping equipment in 1990 were backcast from the existing (2019) inventory. A backcast is an estimate of emissions in 1990 that is developed by projecting existing emissions or activity data backward to 1990 using socioeconomic factors (e.g., population). Emissions from water and wastewater use and solid waste generation were backcast using the reverse growth in campus population (2019 to 1990).¹⁰ Emissions from landscaping equipment were backcast using the reverse growth in building gsf.

GHG emissions from commuting in 1990 were updated to be consistent with the methodology used to estimate mobile source emissions generated by implementation of the 2020 LRDP Update. The UC Davis CAP calculated VMT based on parking permit zip code data while Fehr & Peers used SACOG's travel demand model for the 2020 LRDP Update (University of California, Davis 2018; Hananouchi pers. comm.). Commuting emissions reported in the UC Davis CAP also do not include visitor trips, vendor trips, and other trips that may not be associated with commuting but are generated by the campus. These vehicle trips and associated emissions are included in the existing (2019) inventory and future year forecasts for the 2020 LRDP Update. Accordingly, VMT provided by Fehr & Peers for the existing (2019) inventory were backcast using the reverse growth in campus population (i.e., 2019 to 1990). GHG emissions generated by this VMT were then quantified using 1990 emission factors from CARB's EMFAC2011 database, which is the last version of EMFAC to include 1990 emission factors.

The updated 1990 commute emissions and calculated emissions from water and wastewater use, solid waste generation, and landscaping equipment were added to the Scope 1 and 2 emissions reported in the UC Davis CAP to calculate total emissions in 1990 for the Sacramento Campus (see Table 3.7-6 below under *Thresholds of Significance*).

¹⁰ Improvements in renewable energy generation have reduced utility-specific emission rates between 1990 and 2019. Consequently, emissions for the 1990 backcast related to water use may be slightly higher than what is presented in this analysis. Because the 1990 inventory is used to define the future emissions targets for the 2020 LRDP Update, slightly underreporting water sector emissions is conservative.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The following sections summarize the thresholds used to evaluate the significance of project generated GHG emissions under each impact criteria.

Generate a Significant Amount of GHG Emissions

The California Supreme Court's decision in *Center for Biological Diversity v. Department of Fish and Wildlife* (62 Cal.4th 204) confirmed that there are multiple potential pathways for evaluating GHG emissions consistent with CEQA. The decision clarified that use of statewide emission reduction targets is a "permissible criterion of significance" so long as substantial evidence and reasoned explanation is provided to relate those goals to project specific emissions.

As discussed above, SMAQMD has adopted a threshold for stationary source projects and a small project screening metric for land use development projects (Ramboll 2020). Projects with operational emissions in excess of this screening metric can demonstrate a less than significant long-term GHG impact through compliance with BMPs. However, SMAQMD indicates that their land use development guidance may not be directly applicable to hospital projects (Ramboll 2020). Moreover, the screening metric was developed to evaluate a single project, as opposed to plans that are comprised of multiple individual projects and sources, such as the 2020 LRDP Update.

Given the seriousness of climate change and the regional significance of the Sacramento Campus, UC Davis has determined that for the purposes of this analysis, any increase in GHG emissions above existing conditions (net zero) would result in a significant impact on the environment. The project will therefore result in a significant GHG impact if implementation of 2020 LRDP Update increases GHG emissions above existing conditions (2019).

Conflict with Plans, Policies, or Regulations for Reducing GHG Emissions

The following GHG reduction plans, policies, and regulations are evaluated in this analysis. These are the local, regional, and state GHG reduction plans, policies, and regulations most relevant to the 2020 LRDP Update.

- UC Sustainable Practices Policy and CAP
- SACOG's MTP/SCS GHG reduction target
- 2017 Climate Change Scoping Plan
- Other state GHG regulations (e.g., SB 100)
- SB 32 and EO B-55-18 GHG reduction targets

Consistency with the UC Sustainable Practices Policy and CAP, the Scoping Plan, and other general state GHG regulations is evaluated qualitatively. Consistency with SACOG's MTP/SCS is evaluated quantitatively and determined based on whether the 2020 LRDP Update would conflict with the MTP/SCS's 2035 mobile source GHG reduction target, which is 18.9 metric tons CO₂e per capita (Sacramento Area Council of Governments 2019). Consistency with the SB 32 and EO B-55-18 GHG reduction targets is likewise assessed quantitatively, as described below.

The 2020 LRDP Update will guide development on the Sacramento Campus through 2040. The next statewide target year applicable to the 2020 LRDP Update is therefore 2030. As discussed above in Section 3.7.1, *Existing Conditions*, the state has developed a Scoping Plan to meet this target. At this time, the 2045 and 2050 EO goals have not been codified into law and the state does not have a plan to meet these goals. However, consistent with CEQA case law (e.g., *Cleveland National Forest Foundation v. San Diego Association of Governments*), analysis of the 2020 LRDP Update needs to reflect the latest scientific consensus regarding required emissions reductions, which forms the basis of the state's long-term emissions goals under EO B-55-18 and S-3-05.

Consistency with the SB 32 GHG reduction target is evaluated based on whether implementation of the 2020 LRDP Update through 2030 would achieve emissions reductions consistent with those required under SB 32. The SB 32 target is based on achieving a 40 percent reduction in 1990 emissions levels by 2030. This Supplemental EIR also evaluates whether emissions generated by implementation of the 2020 LRDP Update in 2040 would be aligned with the state's GHG reduction trajectory and scientific consensus regarding the need to achieve carbon neutrality by 2045 (EO B-55-18). The 2040 consistency threshold is benchmarked from 1990 emissions levels and was calculated by linearly interpolating between the 2030 SB 32 target and EO B-55-18 goal (carbon neutrality by 2045). The resulting metric is an 80 percent reduction in 1990 emissions levels by 2040.

As discussed above in Section 3.7.2, *Environmental Impacts*, 1990 emissions estimates for the Sacramento Campus were developed based on a combination of values reported in the UC Davis CAP and updated modeling for Scope 3 sources. Table 3.7-6 summarizes the 1990 GHG inventory for the Sacramento Campus and presents the 2030 and 2040 GHG emission thresholds for the 2020 LRDP Update plan consistency analysis. As noted above, the thresholds are benchmarked from the 1990 inventory for the Sacramento Campus consistent with statewide GHG reduction targets. Implementation of the 2020 LRDP Update will conflict with the SB 32 and EO B-55-18 GHG reduction targets if they exceed the threshold levels shown in Table 3.7-6.

Table 3.7-6. Sacramento Campus 1990 Emissions Inventory and 2030 and 2040 GHG Thresholds of Significance for Consistency with SB 32 and EO B-55-18 GHG Reduction Targets

Scope/Source	Metric Tons CO ₂ e
Scope 1 and 2	
Stationary	
Mobile	
Fugitive	20,335 ^a
Energy ^b	
Area ^c	<1
Scope 3	
Commute ^d	27,668
Business air travel ^e	1,493
Water and wastewater ^c	92
Solid waste generation ^c	815
Total	50,404
2030 threshold (percent below 1990 levels) ^f	30,242 (-40%)
2040 threshold (percent below 1990 levels) ^g	10,081 (-80%)

Source: ICF modeling.

^a Scope 1 and 2 emissions resulting from UC Davis owned mobile, stationary, energy, and fugitive sources could not be disaggregated in the UC Davis CAP.

^b Includes emissions from purchased electricity and purchased natural gas.

^c Emissions from area sources (landscaping equipment), water and wastewater use, and solid waste generation were not quantified in the UC Davis CAP. Emissions from water and wastewater use and solid waste generation were backcast using the reverse growth in campus population. Emissions from landscaping equipment were backcast using the reverse growth in building gsf.

^d Includes emissions from employee, patient, and visitor commuting (including deliveries). Emissions for the 1990 inventory were calculated by ICF using EMFAC2017, VMT data from Fehr & Peers for the existing (2019) conditions analysis, and the reverse growth in campus population.

^e Apportioned total UC Davis 1990 air travel emissions to the Sacramento campus based on historical employee populations for the Davis and Sacramento campuses (University of California, Davis 2018; Kirk pers. comm. [b]).

^f Based on the state's 2030 GHG reduction target under SB 32, which is a 40 percent reduction in 1990 emissions levels by 2030.

^g Linearly interpolated between the state's 2030 GHG reduction target under SB 32 and EO B-55-18, which is to achieve carbon neutrality by 2045.

Impacts and Mitigation Measures

Impact LRDP-GHG-1: Generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Implementation of the 2020 LRDP Update would reduce GHG emissions below existing conditions. Accordingly, the 2020 LRDP Update would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions. This impact would be **less than significant**.

Development under the 2020 LRDP Update would result in construction and operational GHG emissions that could contribute to climate change on a cumulative basis. Construction emissions would originate from mobile and stationary construction equipment exhaust, employee and haul truck vehicle exhaust, and electricity consumption. Long-term operational sources of GHG emissions

include mobile sources, stationary sources, area sources, energy sources, fugitive sources, water and wastewater use, and solid waste generation, as discussed further in *Methods for Analysis*.

Table 3.7-7 and Figure 3.7-1 present the estimated construction and operational emissions resulting from implementation of the 2020 LRDP Update. Operational emissions generated by existing campus facilities are also presented, as well as estimated per capita emissions. The analyses reflect adopted state regulations designed to reduce GHG emissions (e.g., RPS). The 2020 LRDP Update analysis also includes quantifiable emissions benefits that will be achieved by the UC Sustainable Practices Policy. As discussed above, the Sustainable Practices Policy includes a comprehensive set of strategies that will improve energy efficiency, increase renewable energy generation, reduce water consumption and waste generation, and encourage alternative transportation and low emissions vehicles. The following policies were specifically quantified and included in the 2020 LRDP Update operational analysis shown in Table 3.7-7.

- Demand side load reduction in buildings served by the Central Energy Plan stemming from green building design and energy efficiency improvements.
- Prohibition of natural gas infrastructure in new buildings constructed after 2019 not served by the Central Energy Plant.
- Procurement of 100 percent zero carbon electricity beginning in 2025 (does not apply to P3s, except Aggie Square Phase I).
- Regional factors accounted for in SACOG's travel model that reduce project related VMT, such as job accessibility, job/housing density, and job/housing mix and balance.

The UC Sustainable Practices Policy would achieve additional GHG reductions by policies that improve water conservation and recycling initiatives, as well increase the penetration of EV in the campus vehicle fleet. However, these other policies were not quantified because of constraints associated with the forecast method or because the exact number of affected structures is currently unknown. Likewise, because the long-term climate change policy and regulatory changes to meet the 2045 reduction target expressed under EO B-55-18 are unknown at this time, the extent to which project emissions would be reduced through implementation of statewide (and nationwide) changes is not known, the calculation of post-2030 emissions cannot take into account future state or federal actions that may be taken to achieve long-term reductions, beyond the Pavley vehicle standards and SB 100. Operational emissions from implementation of the 2020 LRDP Update will therefore likely be lower than those presented in Table 3.7-7.

Table 3.7-7. Estimated GHG Emissions for Implementation of the 2020 LRDP Update without University Carbon Neutrality Initiative (metric tons CO₂e per year)

Emission Scope and Source	Existing Conditions (2019)	2020 LRDP Update Near-Term Implementation (2030)	2020 LRDP Update Implementation (2040)
Scope 1 and 2			
Mobile ^a	584	448	454
Stationary ^b	62,054	68,309	68,928
Energy ^c	3,389	657	657
Fugitive ^d	638	853	875
Area ^e	<1	<1	3
Total Scope 1 and 2	66,665	70,267	70,917
Scope 3			
Mobile ^f	54,704	57,387	54,402
Business air travel	2,487	2,299	2,476
Water and wastewater use	243	174	129
Solid waste generation	2,151	2,075	2,318
2020 LRDP construction ^g	NA	1,106	1,334
Total Scope 3	59,585	63,042	60,659
Non-Scope Specific			
P3 projects ^h	2,075	20,706	18,349
Purchased offsets and RECs	-4,489	NA	NA
Total non-scope specific	-2,413	20,706	18,349
Total emissions (all scopes)	123,837	154,015	149,925
Emissions per capita	9.1	7.8	7.1
Net change from existing	-	30,178	26,088

Source: ICF modeling.

^a Emissions from campus fleet vehicles and medical helicopter transport services.^b Emissions from diesel emergency generators and boilers and turbines at the Central Energy Plant^c Emissions from purchased electricity (existing conditions only) and natural gas. Under 2030 and 2040 build conditions, all electricity will be purchased from 100 percent zero carbon sources.^d Emissions from natural gas distribution losses and refrigeration and air conditioning equipment.^e Emissions from landscaping equipment.^f Emissions from vehicle trips made by employees, students, and patients commuting to the Sacramento Campus.^g Total construction emissions for the 2020 LRDP Update amortized over a 30-year building lifespan.^h Operating emissions from the Courtyard by Marriot and Ronald McDonald House (all conditions) and Aggie Square Phase I, Rehabilitation Hospital, and Aggie Square Phase II (implementation of 2020 LRDP Update only).

As shown in Table 3.7-7, implementation of the 2020 LRDP Update would generate 154,015 metric tons CO₂e in 2030 and 149,925 metric tons CO₂e in 2040. While the amount of development on the Sacramento Campus would increase between 2030 and 2040, emissions are slightly lower under full build conditions. This decrease is due to expected improvements in vehicle engine technology and fuel efficiency, as well as increased penetration of renewable resources in SMUD's energy mix pursuant to SB 100.

While the carbon intensity of the economy is predicted to decrease over time, compared to existing conditions, implementation of the 2020 LRDP Update is estimated to increase GHG emissions. Most of the emissions increase is due to Scope 1 and 2 sources and non-scope specific sources. The increase in Scope 1 and 2 emissions is primarily associated with additional stationary source combustion at the Central Energy Plant, whereas the increase in non-scope specific emissions is from new P3 development projects.

With expected emissions increases resulting from future development on the Sacramento Campus, UC Davis will be concurrently implementing 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 2050. As noted above, to the extent reductions achieved by the UC Sustainable Practices Policy could be quantified, they have been included in Table 3.7-7. The projected remaining Scope 1 and 2 emissions of 70,267 metric tons CO₂e in 2030 and 70,917 metric tons CO₂e would be offset to achieve Scope 1 and 2 carbon neutrality in accordance with the UC Sustainable Practices Policy.

As shown in Table 3.7-8, with implementation of the University Carbon Neutrality Initiative pursuant to the UC Sustainable Practices Policy, the 2020 LRDP Update would reduce GHG emissions by more than 40,000 metric tons CO₂e under 2030 conditions and 44,000 metric tons CO₂e in 2040, compared to existing conditions. As described further below the table, these reductions will be achieved through GHG offset purchased to meet the requirement of carbon neutrality for Scope 1 and 2 emissions by 2025. The 2020 LRDP Update would also reduce the intensity of emissions generation, achieving substantially lower per capita emissions. Because the 2020 LRDP Update would result in a net reduction of GHG emissions, implementation of the project would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions. Accordingly, this impact would be **less than significant**.

The 2010 LRDP Final EIR likewise concluded that implementation of the 2010 LRDP would have a less-than-significant impact on GHGs with implementation of Mitigation Measures. Therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Table 3.7-8. Estimated GHG Emissions for Implementation of the 2020 LRDP Update with University Carbon Neutrality Initiative (metric tons CO₂e per year)

Emission Scope and Source	Existing Conditions (2019)	2020 LRDP Update Near-Term Implementation (2030)	2020 LRDP Update Implementation (2040)
Scope 1 and 2			
Mobile ^a	584	0	0
Stationary ^b	62,054	0	0
Energy ^c	3,389	0	0
Fugitive ^d	638	0	0
Area ^e	<1	0	0
Total Scope 1 and 2	66,665	0	0
Scope 3			
Mobile ^f	54,704	57,387	54,402
Business air travel	2,487	2,299	2,476
Water and wastewater use	243	174	129
Solid waste generation	2,151	2,075	2,318
2020 LRDP construction ^g	NA	1,106	1,334
Total Scope 3	59,585	63,042	60,659
Non-Scope Specific			
P3 projects ^h	2,075	20,706	18,349
Purchased offsets and RECs	-4,489	NA	NA
Total non-scope specific	-2,413	20,706	18,349
Total emissions (all scopes)	123,837	83,748	79,008
Emissions per capita	9.1	4.3	3.7
Net change from existing	–	-40,089	-44,829
Analysis threshold	–	0	0

Source: ICF modeling. 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. Accordingly, emissions from these sources are shown as “0” in the table.

^a Emissions from campus fleet vehicles and medical helicopter transport services. Offset to net zero beginning in 2025 pursuant to the University Carbon Neutrality Initiative.

^b Emissions from diesel emergency generators and boilers and turbines at the Central Energy Plant. Offset to net zero through sustainability policies and offsets beginning in 2025 pursuant to the University Carbon Neutrality Initiative.

^c Emissions from purchased electricity and natural gas. Offset to net zero through sustainability policies and offsets beginning in 2025 pursuant to the University Carbon Neutrality Initiative.

^d Emissions from natural gas distribution losses and refrigeration and air conditioning equipment. Offset to net zero through sustainability policies and offsets beginning in 2025 pursuant to the University Carbon Neutrality Initiative.

^e Emissions from landscaping equipment. Offset to net zero through sustainability policies and offsets beginning in 2025 pursuant to the University Carbon Neutrality Initiative.

^f Emissions from vehicle trips made by employees, students, and patients commuting to the Sacramento Campus.

^g Total construction emissions for the 2020 LRDP Update amortized over a 30-year building lifespan.

^h Operating emissions from the Courtyard by Marriot and Ronald McDonald House (all conditions) and Aggie Square Phase I, Rehabilitation Hospital, and Aggie Square Phase II (implementation of 2020 LRDP Update only).

UC Davis produces an annual GHG inventory to track GHG emission volumes and sources. The annual GHG inventory for the Sacramento Campus will be used to determine the need for purchasing carbon offsets in 2025 to ensure emission reductions match the carbon neutral 2025 requirement for Scopes 1 and 2 emissions. The 2050 annual inventory will be used to track compliance with the Scope 3 mobile source and air travel carbon neutral requirement, but 2050 is outside of the 2020 LRDP Update planning period.

A GHG offset enables development projects to compensate for their GHG emissions and associated environmental impacts by financing reductions in GHG emissions elsewhere. GHG offsets are classified as either compliance or voluntary. Compliance offsets can be purchased by covered entities subject to the cap-and-trade regulation to meet predetermined regulatory targets. Voluntary offsets are not associated with the cap-and-trade regulation and are purchased with the intent to voluntarily meet carbon neutral or other environmental obligations. Demand for voluntary offsets is driven by companies and individuals that take responsibility for offsetting their own emissions, as well as entities that purchase pre-compliance offsets before emissions reductions are required by regulation (Ecosystem Marketplace 2020). The global market for voluntary offsets transacted nearly \$300 million and traded roughly 100 million metric tons of CO₂e in 2018, which is the latest year for which data are available (Ecosystem Marketplace 2019).

Measures that retain value for the campus, such as energy efficiency or additional renewable energy projects, will be prioritized over measures that send value off campus, such as purchasing offsets. Additionally, options for investing in community-based research or student engagement projects as alternative or innovative types of offsets are being investigated through a UC system-wide initiative. Table 3.7-9 provides a comparative pricing analysis using a banded set of future compliance and voluntary market pricing values based on the economic assumptions in the Utility Master Plan (Affiliated Engineers, Inc. 2019:9-27). Carbon offsets for Scope 1 and Scope 2 emissions would likely be composed of both compliance (for the Central Energy Plant under its obligation as a covered entity to meet its mandated emissions cap) and voluntary offsets, and therefore would fall within the cost range shown in Table 3.7-9.

Table 3.7-9. Comparison of Carbon Offset Pricing and Costs Associated with Reducing the Sacramento Campus Scope 1 and Scope 2 Emissions to Zero

Parameter	2030	2040
Scope 1 and 2 emissions (metric tons CO ₂ e) (Table 3.7-7)	70,267	70,917
Compliance offset price (per metric ton CO ₂ e)	\$30.53	\$60.05
Voluntary offset price (per metric ton CO ₂ e)	\$15.96	\$27.45
Annual cost to the campus (2030 and 2040)	\$1.1 to 2.1 million	\$2.0 to 4.2 million

Sources: ICF modeling; Affiliated Engineers, Inc. 2019:9-27.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases

The 2020 LRDP Update would not conflict with local UC Davis plans and policies, implementation of the Scoping Plan, or other general state regulations adopted for the purposes of reducing GHG emissions (e.g., SB 100). However, per capita mobile source emissions would exceed SACOG's MTP/SCS GHG reduction target. Total emissions resulting from the 2020 LRDP Update would also exceed project-specific emissions thresholds derived from the state's long-term climate change goals under SB 32 and EO B-55-18. Implementation of the UC Sustainable Practices Policy, Mitigation Measures LRDP-AQ-2e, LRDP-TRA-1a, and LRDP-GHG-2 would reduce emissions consistent with the state's climate change reduction trajectory, as articulated under statewide regulations and legislation (e.g., SB 32, EO B-55-18). Therefore, this impact would be **less than significant with mitigation**.

The UC Sustainable Practices Policy and the UC Davis CAP are the relevant local GHG reduction plans with which to review compliance under this impact analysis. At the regional level, this impact analysis evaluates whether GHG emissions resulting from implementation of the 2020 LRDP Update would conflict with SACOG's MTP/SCS per-capita GHG targets for vehicle emissions. In the state context, consistency with the Scoping Plan, relevant GHG regulations, and state reduction targets (SB 32 and EO B-55-18) is assessed.

UC Sustainability Practices Policy and Climate Action Plan

The UC system and the Sacramento Campus are committed to responsible stewardship of resources and leadership in climate protection. As described above under Impact LRDP-GHG-1, the 2020 LRDP Update will result in large-scale GHG reductions compared to existing conditions in terms of both mass (absolute) and per-capita emissions. While some of these reductions will be achieved by state actions that reduce the carbon intensity of the future economy (e.g., SB 100), a considerable amount is directly the result of the UC Sustainable Practices Policy. The 2020 LRDP Update is subject to the reduction strategies and requirements of the UC Sustainable Practices Policy, which includes an accounting framework to plan for and offset emissions from covered sources in accordance with the University Carbon Neutrality Initiative.

Proposed land uses, population increases, building development and redevelopment, and planned infrastructure for the 2020 LRDP Update are required through UC policies to achieve the University's CAP goals. Individually, these elements would not reduce GHG emissions and, in contrast, could increase emissions relative to each respective baseline condition due to the campus' expansion under the 2020 LRDP Update. However, with implementation of the 2020 LRDP Update, the following would occur.

- Existing campus facilities would be redeveloped to be more energy efficient, resulting in less energy use and generating less emissions than existing conditions.
- New on-campus facilities would be developed to meet or exceed energy efficiency standards with a commitment to achieve LEED Silver, thereby resulting in fewer emissions from electricity and natural gas use compared to similar new facilities built elsewhere in the state.
- Land use and planned infrastructure would be developed to discourage personal gasoline vehicle use, such as through limited parking for personal vehicles and shared vehicle provisions,

increasing penetration of ZEV in the campus vehicle fleet, and improving bicycle and transit infrastructure, thereby reducing transportation-related emissions.

- Any remaining GHG emissions that need to be reduced after the physical implementation of the 2020 LRDP Update to meet UC Davis' GHG reduction targets of their CAP would be abated by verified carbon offset purchases made by UC Davis pursuant to the Carbon Neutrality Initiative.

The combination of these actions would lead to the emissions reductions, relative to baseline conditions, shown in Table 3.7-8 despite increases in campus population under the 2020 LRDP Update. The 2020 LRDP Update would implement the UC Sustainable Practices Policy, which in turn supports the CAP. Therefore, there is no conflict or inconsistency with UC Davis' local GHG reduction plans and policies.

SACOG's MTP/SCS GHG Reduction Target (SB 375)

SACOG's MTP/SCS achieves a 2035 per capita GHG vehicle emissions rate of 18.9 pounds CO₂e per day (Sacramento Area Council of Governments 2019:8-21). This level is equivalent to 19 percent below 2005 per-capita mobile source GHG emissions, which meets the SB 375 target set by CARB. As shown in Table 3.7-8, Scope 3 mobile source emissions are estimated to be 54,402 metric tons CO₂e in 2040. P3 Facilities would generate 18,349 metric tons CO₂e, and of this, 15,806 metric tons CO₂e are from mobile sources. Accordingly, total mobile source emissions resulting from implementation of the 2020 LRDP Update in 2040 are 70,208 metric tons CO₂e, 446,060 pounds per day. The projected campus population in 2040 is 21,000, resulting in a per capita GHG vehicle emissions rate of 21.0 pounds CO₂e per day. This is higher than the per capita emissions rate needed to meet SACOG's MTP/SCS SB 375 GHG reduction target.

UC Davis' Green Commuter Program, which provides incentives for carpooling, vanpooling, bicycling, walking, and using transit, would contribute to future mobile source emissions reductions by raising awareness about mode shift. Mitigation Measure LRDP-AQ-2e, which is required to address criteria pollutants from mobile sources, would likewise reduce GHG emissions by reducing vehicle trips, enhancing walkability and pedestrian network connectivity, and supporting low-emission and zero-emissions vehicles and equipment. Mitigation Measure LRDP-TRA-1a, as described in Section 3.15, *Transportation and Circulation*, will also support mode shifting and associated vehicle emissions reductions by facilitating service improvements that are necessary to improve transit performance and reliability. Through this measure and the 2020 LRDP Update, UC Davis plans to construct and operate a new mobility hub at 45th Street north of 2nd Avenue, which will provide a centralized transit center. UC Davis would also coordinate with and support the City of Sacramento on new roadway transit improvements along Stockton Boulevard, including potentially bus rapid transit. These programs will lower the per-capita emissions rate, but those reductions may not be enough to achieve consistency with SACOG's MTP/SCS GHG reduction target.

Refer to Section 3.15, *Transportation and Circulation*, for an analysis of project consistency with the VMT and smart growth goals of the MTP/SCS.

2017 Climate Change Scoping Plan

The State's near-term GHG strategy is defined by SB 32. The Scoping Plan identifies specific measures to reduce statewide GHG emissions and achieve the state's 2030 GHG reduction target pursuant to SB 32. The Scoping Plan builds on the programs set in place as part of the previous scoping plan that was drafted to meet the 2020 reduction target per AB 32. The Scoping Plan

proposes meeting the 2030 goal by accelerating the focus on zero and near-zero technologies for moving freight, continued investment in renewables, greater use of low-carbon fuels including electricity and hydrogen, stronger efforts to reduce emissions of SLCP (i.e., CH₄ and fluorinated gases), further efforts to create walkable communities with expanded mass transit and other alternatives to traveling by car, continuing the cap-and-trade program, and ensuring that natural lands become carbon sinks to provide additional emissions reductions and flexibility in meeting the target.

Through implementation of the UC Sustainable Practices Policy, existing and future development on the Sacramento Campus will be designed around the concept of sustainability. This is manifested through green-building principles, including an emphasis on energy efficiency, water conservation, and waste reduction, as well as practices to reduce dependence on fossil fuels. Although the measures included in the Scoping Plan are necessarily broad, the 2020 LRDP Update is generally consistent with the goals and desired outcomes of the plan (i.e., increasing energy efficiency, water conservation, waste diversion, and transportation sustainability). Table 3.7-10 analyzes the consistency of the 2020 LRDP Update with the policies in the Scoping Plan.

Table 3.7-10. 2020 LRDP Update Consistency with Scoping Plan Policies

Policy	Primary Objective	2020 LRDP Update Consistency Analysis
SB 350	Reduce GHG emissions in the electricity sector through the implementation of the 50% RPS, doubling of energy savings, and other actions as appropriate to achieve GHG emissions reductions planning targets in the Integrated Resource Plan process.	This policy is a State program that requires no action at the project level. Nonetheless, new and existing development under the 2020 LRDP Update would be consistent with the energy saving objective of this measure. The UC Sustainable Practices Policy includes requirements for buildings to exceed energy efficiency standards and/or achieve LEED silver certification, at a minimum. Beginning in 2025, the Sacramento Campus would also obtain 100% zero-carbon electricity. A large retrocommissioning effort is also underway on the Sacramento Campus to reduce the energy consumption of existing buildings through more efficient operations. Additionally, near real-time software is being deployed to identify new energy reduction measures and track existing measures.
Low Carbon Fuel Standard	Transition to cleaner/less-polluting fuels that have a lower carbon footprint.	This policy is a State program that requires no action at the project level. Nonetheless, the 2020 LRDP Update would support reducing the carbon footprint associated with vehicle travel. The UC Sustainable Practices Policy requires ZEV or hybrid vehicles to account for 50% of all new light-duty vehicle acquisitions to the campus fleet by 2025. The policy also encourages campuses to have at least 30% of its commuters using ZEV by 2050. Beyond the UC Sustainable Practices Policy, the 2020 LRDP Update would minimize off-street parking to help reduce vehicle trips and support alternative transportation. Short- and long-term bicycle parking, as well as dedicated parking for PEV, would also be provided.

Policy	Primary Objective	2020 LRDP Update Consistency Analysis
Mobile Source Strategy (CTF Scenario)	Reduce GHGs and other pollutants from the transportation sector through transition to zero-emission and low-emission vehicles, cleaner transit systems and reduction of VMT.	This policy is a State program that requires no action at the project level. Nonetheless, the 2020 LRDP Update would support its implementation through compliance with the UC Sustainable Practices Policy, which will support alternative transportation, ZEV, and overall reductions in vehicle trips.
SB 1383	Approve and implement short-lived climate pollutant strategy to reduce highly potent GHGs.	This policy is a State program that requires no action at the project level. Regulations stemming from the SLCP Reduction Strategy have not yet been developed (Ramboll 2020). Both existing and new development, including development under the 2020 LRDP Update, would be required to comply with State regulations for minimizing HFCs that are in place at the time of construction. Pursuant to the UC Sustainable Practices Policy, fugitive emissions of high GWP gases on the Sacramento Campus (Scope 1) will be offset to net zero beginning in 2025. Low GWP refrigerants would also be prioritized for the Aggie Square Phase I chillers, should they become commercially available and cost effective.
California Sustainable Freight Action Plan	Improve freight efficiency, transition to zero-emission technologies, and increase competitiveness of California's freight system.	This policy is a State program that requires no action at the project level, and does not directly apply to the 2020 LRDP Update, which is not a freight project.
Post-2020 Cap and-Trade Program	Reduce GHGs across largest GHG emissions sources.	Emissions generated by the boilers and turbine at the Central Energy Plant are subject to the cap-and-trade program. Beginning in 2025, GHG emissions generated by the Central Energy Plant will be offset to net zero pursuant to the UC Sustainable Practices Policy.

CTF = cleaner technology fuels.

Other State Regulations

Outside of the Scoping Plan, the State has adopted several other regulations and programs to achieve future GHG reductions, as described further in Section 3.7.1, *Existing Conditions*.

Regulations, such as the SB 100-mandated 100 percent carbon-free RPS by 2045; implementation of the state's SLCP Reduction Strategy, including forthcoming regulations for composting and organics diversion; and future updates to the state's Title 24 standards (including requirements for net zero energy buildings), will be necessary to attain the magnitude of reductions required for the state's 2030 GHG target. The 2020 LRDP Update would be required to comply with these regulations in new construction (in the case of updated Title 24 standards), or would be directly affected by the outcomes (e.g., energy consumption would be less carbon intensive due to the increasingly stringent RPSs). Unlike the Scoping Plan, which explicitly calls for additional emissions reductions from local governments and new projects, none of these state regulations identify specific requirements or

commitments for new development beyond what is already required by existing regulations or will be required in forthcoming regulation. Therefore, there is no conflict or inconsistency.

SB 32 and EO B-55-18 Reduction Targets

While the 2020 LRDP Update is consistent with the broad policy objectives of the Scoping Plan and supporting state programs, successful implementation of SB 32 (as a regulation) and attainment of the state's long-term climate change goal of carbon neutrality (EO B-55-18) will require deep emissions reductions across all sectors. Assessment toward meeting the state's climate change goals is benchmarked from 1990 emissions levels, which, as an existing source in 1990, the Sacramento Campus contributed. Table 3.7-11 compares emissions reductions from 1990 levels for the 2020 LRDP Update to the equivalent state target for the Sacramento Campus.

Table 3.7-11. SB 32 and EO B-55-18 Consistency Analysis for the 2020 LRDP Update (metric tons CO₂e per year, unless otherwise stated)

Emission Scope and Source	1990 Conditions	2020 LRDP Update Near-Term Implementation (2030) ^a	2020 LRDP Update Implementation (2040) ^a
Scope 1 and 2	20,335	0	0
Scope 3	30,068	63,043	60,659
Non-scope specific	NA	20,706	18,349
Total emissions (all scopes)	50,404	83,748	79,008
Percent change from 1990 levels	–	+66%	+57%
Consisted threshold (emissions [percent change from 1990 levels])	–	30,242 [-40%]	10,801 [-80%]

Source: ICF modeling.

^a Scope 1 and 2 emissions offset to net zero beginning in 2025 pursuant to the University Carbon Neutrality Initiative.

As shown in Table 3.7-11, even with implementation of the University Carbon Neutrality Initiative, the 2020 LRDP Update would increase GHG emissions on the Sacramento Campus relative to 1990 levels. These emissions increases could conflict with the state's ability to achieve its 2030 reduction target under SB 32 and future goal of carbon neutrality by 2045.

Conclusion

The 2020 LRDP Update would not conflict with local UC Davis plans and policies, implementation of the Scoping Plan, or other general state regulations adopted for the purposes of reducing GHG emissions (e.g., SB 100). However, per capita mobile source emissions would exceed SACOG's MTP/SCS GHG reduction target. Total emissions resulting from the 2020 LRDP Update would also exceed project-specific emissions thresholds derived from the state's long-term climate change goals. This exceedance could affect the state's ability to achieve its 2030 reduction target under SB 32 and future goal of carbon neutrality by 2045. This is a significant impact.

The estimated increase in emissions above 1990 levels resulting from the 2020 LRDP Update is primarily due to the projected increase in stationary and mobile source emissions (Scope 3). The Sacramento Campus currently includes 3.7 million gsf of building space and has a population of 13,667. Campus operations were significantly smaller in 1990, with only 1.6 million gsf of building

space and a population of 5,180. With implementation of the 2020 LRDP Update, the Sacramento Campus will include 7.1 million gsf of building space and serve a population of 21,200 (inclusive of P3 facilities). This represents a 345 percent increase in building square footage and 309 percent increase in campus population, relative to 1990. Growth in campus facilities has required expansion of the Central Energy Plant, contributing to a substantial increase in emissions from stationary source combustion. Likewise, growth in campus population has expanded VMT, thereby increasing emissions from mobile sources.

As discussed above, GHG emissions from stationary source combustion (Scope 1) will be offset to net zero beginning in 2025, pursuant to the University Carbon Neutrality Initiative. UC Davis' Green Commuter Program, which provides incentives for carpooling, vanpooling, bicycling, walking, and using transit, would contribute to mobile source GHG emissions reductions by raising awareness about mode shift. Mitigation Measure LRDP-AQ-2e, which is required to address criteria pollutants from mobile sources, would likewise reduce GHG emissions by reducing vehicle trips, enhancing walkability and pedestrian network connectivity, and supporting low-emission and zero-emissions vehicles and equipment. Mitigation Measure LRDP-TRA-1a will also support mode shifting and associated vehicle emissions reductions by facilitating service improvements that are necessary to improve transit performance and reliability. These measures will collectively reduce mobile source GHG emissions. However, UC Davis does not have jurisdiction over vehicle trips and the effectiveness of the measures would depend on the cooperation of visitors, employees, patients, and vendors visiting the plan area. Reductions achieved by Mitigation Measures LRDP-AQ-2e and LRDP-TRA-1a likely would not be enough to achieve SACOG's MTP/SCS GHG reduction target or the SB 32 and EO B-55-18 thresholds.

The University Carbon Neutrality Initiative requires Scope 3 mobile source and air travel emissions to be offset to net zero beginning in 2050. The offset year of 2050 was selected by The Regents 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. Since then, the goal post for global GHG emissions reduction has advanced, with scientific agreement that carbon neutrality must be achieved by midcentury to avoid the most catastrophic consequences of climate change. California's commitment to carbon neutrality by 2045 is articulated under EO B-55-18.

Considering the accelerated timeframe for offsetting emissions and ultimately achieving carbon neutrality, Mitigation Measure LRDP-GHG-2 is required. This measure identifies actions beyond the UC Sustainable Practices Policy that will achieve additional GHG reductions on the Sacramento Campus. The mitigation also expands the UC's carbon neutrality commitments, requiring the Sacramento Campus to offset GHG emissions to achieve a 40 percent reduction in 1990 emissions levels by 2030, an 80 percent reduction in 1990 emissions levels by 2040, and carbon neutrality beginning in 2045. Mitigation Measure LRDP-GHG-2 will be implemented alongside the UC Sustainable Practices Policy and University Carbon Neutrality Initiative, where any additional GHG reductions needed to meet the 2030, 2040, and 2045 performance standards will be achieved through the strategies outlined in the mitigation. Because Mitigation Measure LRDP-GHG-2 will reduce GHG emissions resulting from implementation of the 2020 LRDP to 40 percent below 1990 emissions levels by 2030, 80 percent reduction below 1990 emissions levels by 2040, and carbon neutral by 2045, the project would not conflict with the GHG reduction targets of SACOG's MTP/SCS, SB 32, or EO B-55-18. Consequently, this impact is **less than significant with mitigation**.

The onsite and offsite strategies outlined in Mitigation Measure LRDP-GHG-2 will achieve considerable GHG reductions. However, because the extent of implementation of these strategies is not fully known, a high-level cost analysis was conducted to document the economic feasibility of purchasing GHG offsets to fully mitigate this impact to a less-than-significant level¹¹. Table 3.7-12 identifies the remaining emissions in 2030 and 2040 that would need to be offset to achieve the 1990 consistency targets. The table also identifies annual costs to the university to offset those emissions based on the projected price of future voluntary offsets (Affiliated Engineers, Inc. 2019:9-27).

Table 3.7-12. Potential Costs to Offset GHG Emissions from the 2020 LRDP Update to Consistency Thresholds

Parameter	2030	2040
Total 2020 LRDP Update emissions (metric tons CO ₂ e) ^a	83,749	79,008
Consisted threshold (metric tons CO ₂ e) ^b	30,242	10,081
Required offsets to achieve threshold	53,506	68,927
Voluntary offset price (per metric ton)	\$15.96	\$27.45
Annual cost to the campus (2030 and 2040)	\$854,000	\$1.9 million

Source: ICF modeling; Affiliated Engineers, Inc. 2019:9-27.

^a Scope 1 and 2 emissions offset to net zero beginning in 2025 pursuant to the University Carbon Neutrality Initiative.

^b The 2030 target is based on the state's 2030 GHG reduction target under SB 32, which is a 40 percent reduction in 1990 emissions levels by 2030. The 2040 target is calculated by linearly interpolating between the state's 2030 GHG reduction target under SB 32 and EO B-55-18, which is to achieve carbon neutrality by 2045.

Annual offsets would need to be purchased over the lifespan of the plan. Holding the annual offsets constant at the levels shown in Table 3.7-12 and using the annual projected price of future voluntary offsets (Affiliated Engineers, Inc. 2019:9-27)¹², purchasing offsets would result in approximately \$102 million in fees over a 30-year plan life (inclusive of the 10 years to offset emissions between 2030 and 2040).¹³ Of this, approximately \$47 million would be paid to offset just Scope 3 mobile sources and air travel beginning in 2050, pursuant to the University Carbon Neutrality Initiative. Accordingly, fully offsetting emissions from the 2020 LRDP Update to achieve consistency with the State's climate change goals would require \$55 million in additional fees beyond what the campus will pay to comply with the University Carbon Neutrality Initiative.

Mitigation Measure LRDP-AQ-2e: Reduce operational PM₁₀ emissions

Refer to measure description under Impact LRDP-AQ-2 in Section 3.2, *Air Quality*.

Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service

Refer to Section 3.15, *Transportation and Circulation*, in Volume 1 of this Supplemental EIR.

¹¹ If GHG offsets were used to fully mitigate the impact to less than significant, they would represent 64 percent of the 2030 forecast and 87 percent of the 2040 forecast (see Table 3.7-12).

¹² Annual prices are provided through 2047. This analysis conservatively holds the 2047 price constant through the remaining project years (i.e., until 2070).

¹³ Based on 49,838 metric tons CO₂e of offsets over 10-years (2030–2040) plus 63,430 metric tons CO₂e of offsets over 30-years (2040–2070, plan lifespan).

Mitigation Measure LRDP-GHG-2: Implement Verifiable Actions or Activities or Purchase the Equivalent GHG Credits from a CARB Approved Registry or a Locally Approved Equivalent Program to Reduce GHG Emissions Generated by the Sacramento Campus

As part of this mitigation measure, UC Davis is making the following separate, though overlapping, GHG emission reduction commitments: (1) As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program; (2) Per the UC Sustainable Practices Policy, Scope 1 and Scope 2 GHG emissions generated by the Sacramento Campus shall, commencing in 2025, be entirely carbon neutral; (3) Also per the UC Sustainable Practices Policy, commencing in 2050, Scope 1, Scope 2, and Scope 3 (commuting and air travel) emissions generated by the Sacramento Campus shall be offset; and (4) UC Davis shall undertake additional action to achieve the following GHG reduction performance standards for the Sacramento Campus:

- By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 60 percent of emissions generated by the campus in 1990.
- By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 20 percent of emissions generated by the campus in 1990.
- By 2045 and thereafter, the Sacramento Campus shall achieve carbon neutrality (i.e., net zero emissions).

GHG emissions generated by the Sacramento Campus in 1990 have been quantified as part of this Supplemental EIR and total 50,404 metric tons CO₂e. This yields the following GHG targets for the above performance standards.

- By 2030, GHG emissions generated by the Sacramento Campus shall not exceed 30,242 metric tons CO₂e.
- By 2040, GHG emissions generated by the Sacramento Campus shall not exceed 10,081 metric tons CO₂e.
- By 2045 and thereafter, GHG emissions generated by the Sacramento Campus shall not exceed net 0 metric tons CO₂e.

The 2030, 2040, and 2045 reduction targets are required to be achieved based on actual emission calculations as completed in the future, as discussed below under "Measure Monitoring and Reporting," and may therefore change overtime.

It is possible that some strategies implemented under the below commitments could independently achieve the performance standards of this measure. Various combinations of strategies could also be pursued to optimize total costs or community co-benefits. UC Davis will be responsible for determining the overall mix of strategies necessary to ensure the performance standards to mitigate GHG generated by the Sacramento Campus. Each of the measure commitments is described in more detail below.

Compliance with CARB's Cap and Trade Program

Any carbon credits purchased for the purpose of compliance with CARB's cap and trade program shall be purchased from an accredited carbon credit market. Such credits (or California Carbon

Offsets) shall be registered with, and retired¹⁴ by an Offset Project Registry, as defined in 17 California Code of Regulations § 95802(a), approved by the California Air Resources Board (CARB) such as, but not limited to, Climate Action Reserve (CAR), American Carbon Registry or Verra (formerly Verified Carbon Standard). In order to demonstrate that the carbon credits 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 Davis shall document in its annual report: (i) the protocol used to develop those credits, and (ii) the third-party verification report concerning those credits. As and when the credits are retired, UC Davis shall document in its annual report the unique serial numbers of those credits showing that they have been retired.

Compliance with the UC Sustainable Practices Policy

Compliance with the UC Sustainable Practices Policy for carbon neutrality will be accomplished through reductions in direct emissions, the purchase of renewable electricity and possibly biomethane, and the purchase of carbon credits. UC Davis 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 the University's research, teaching, and public service mission. Specifically, any voluntary carbon credits used by UC Davis to comply with the UC Sustainable Practices Policy will:

1. Prioritize local (within the Sacramento region) and in-state credits over national credits. Credits shall be third-party verified by a major registry recognized by CARB such as CAR. If sufficient local and in-state credits are not available, UC Davis will purchase CARB conforming national credits registered with an approved registry.
2. Be reported publicly and tracked through the Climate Registry (TCR) as required by the UC Sustainable Practices Policy. TCR is a non-profit organization governed by U.S. states and Canadian provinces and territories. UC Davis TCR reports will be third-party verified and posted publicly.

Additional GHG Reduction Actions

UC Davis shall do one or more of the following options to reduce GHG emissions generated by the Sacramento Campus to achieve the measure performance standards.

1. Implement onsite GHG reduction actions on the Sacramento Campus (Option 1).
2. Implement GHG reduction actions throughout the communities surrounding the Sacramento Campus in the City of Sacramento (Option 2).
3. Purchase CARB verified GHG credits (Option 3).

Each of the options is described in more detail below.

¹⁴ 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.

Onsite GHG Reduction Actions

Actions to reduce GHG emissions on the Sacramento Campus (Option 1) must exceed or not duplicate activities implemented pursuant to the UC Sustainable Practices Policy. Potential actions may include, but are not limited to the following.

- **(1)-1:** All campus fleet vehicles scheduled for retirement shall be replaced with fuel efficient, LEV, ZEV, and/or alternative-fueled vehicles consistent with the needs of the campus.
- **(1)-2:** New construction shall be required to employ solar roofs on at least 30 percent of roof square footage, unless mechanical equipment or other building specifications safely prohibit inclusion of solar roofs. The inclusion of solar roofs may be part of meeting LEED Silver or equivalent requirements.
- **(1)-3:** Require use of natural alternatives to HFCs that are feasible and readily available for refrigeration and air conditioning. Natural refrigerants include ammonia, CO₂, or hydrocarbons. UC Davis shall require all future development to meet CARB regulations restricting HFCs, if and when adopted.

If UC Davis complies with the performance standards of this measure, as specified above, through implementation of onsite GHG reduction actions (Option 1), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through offsite GHG reduction actions (Option 2) or procurement of GHG credits (Option 3).

Offsite GHG Reduction Actions

Actions to reduce GHG emissions throughout the surrounding community (Option 2) may include, but are not limited to the following.

- **(2)-1:** Develop a residential energy retrofit package in conjunction with the SMUD to achieve reductions in natural gas and electricity usage by the surrounding community. The retrofit package may include identification and sealing of dust and air leaks, installation of programmable thermostats, replacement of interior high use incandescent lamps with compact florescent lamps or LEDs, replacement of natural gas dryers with electric clothes dryers, replacement of windows with double-pane or triple-pane solar-control low-E argon gas filled wood frame windows, or other strategies selected by UC Davis in consultation with SMUD.
- **(2)-2:** Develop a commercial energy retrocommissioning package in conjunction with SMUD to improve the energy efficiency of surrounding commercial buildings by at least 15 percent, relative to current (2019) energy consumption levels.
- **(2)-3:** Develop a residential rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding homeowners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals.
- **(2)-4:** Develop a commercial rooftop solar installation program in conjunction with SMUD. The installation program will allow surrounding business owners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this

measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals.

- **(2)-5:** Partner with Sacramento Regional Transit to assess the feasibility of improving high-quality, regional transit serving the Sacramento Campus.

GHG reductions achieved by all offsite projects must be real, permanent, quantifiable, verifiable, enforceable, and additional (per the definition in California Health and Safety Code Sections 38562(d)(1), as defined further below under Option 3. If UC Davis complies with the performance standards of this measure, as specified above, through implementation of offsite GHG reduction actions (Option 2), then no further action shall be required. If additional GHG reductions are required to meet the performance standards, they may be achieved through onsite GHG reduction actions (Option 1) or procurement of GHG credits (Option 3).

GHG Credits

UC Davis may purchase GHG credits from a voluntary GHG credit provider that has an established protocol that requires projects generating GHG credits 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)). Definitions for these terms are as follows.

- **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")¹⁵.
- **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.
- **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.
- **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.
- **Verified:** GHG reductions must result from activities that have been verified. Verification requires third-party review of monitoring data for a project to ensure the data are complete and accurate.

¹⁵ To ensure that GHG reductions are real, CARB requires the reduction be "a direct reduction within a confined project boundary."

- **Enforceable:** The emission reductions from offset must be backed by a legal instrument or contract that defines exclusive ownership and the legal instrument can be enforced within the legal system in the country in which the offset project occurs or through other compulsory means. Please note that per this mitigation measure, only credits originating within the United States are allowed.

GHG credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or forecasted mitigation units for future committed GHG emissions meeting protocols. All credits shall be documented per protocols functionally equivalent in terms of stringency to CARB's protocol for offsets in the cap and trade program. If using credits not from CARB protocols, UC Davis must provide the protocols from the credit provider and must document why the protocols are functionally equivalent in terms of stringency to CARB protocols.

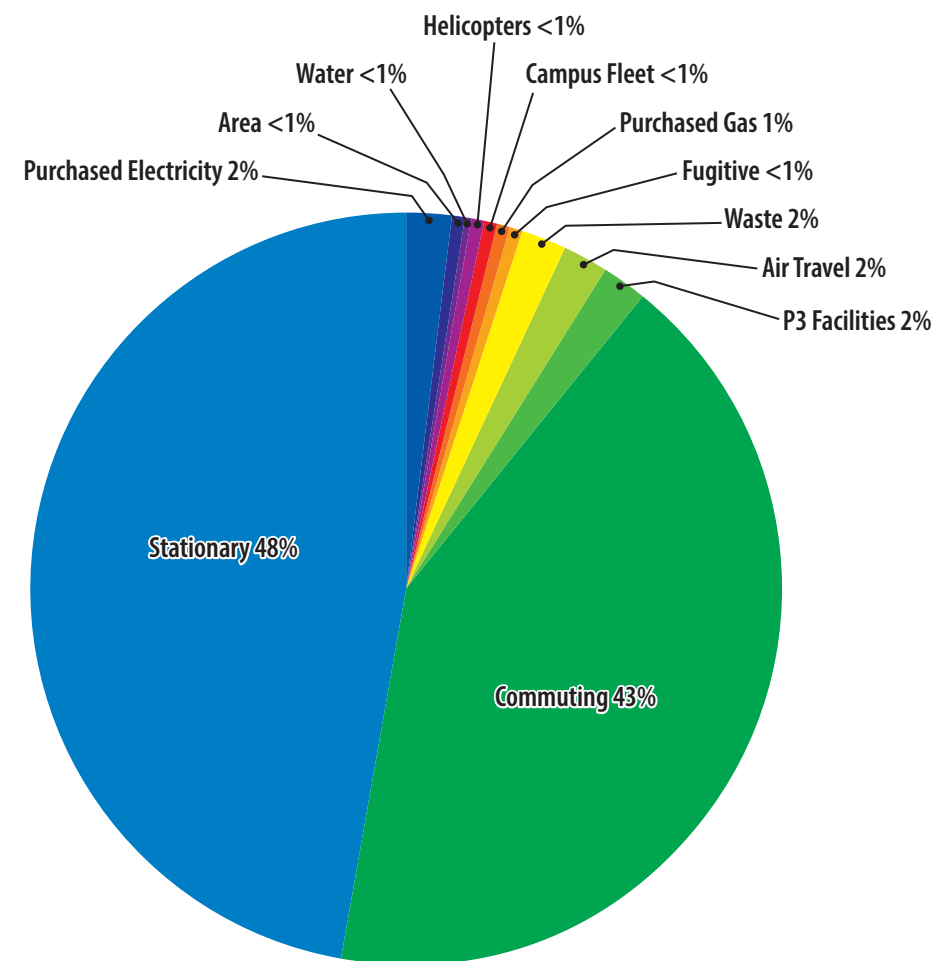
UC Davis shall identify GHG credits in geographies closest to the Sacramento Campus first and only go to larger geographies (i.e., California, United States) if adequate credits cannot be found in closer geographies, or the procurement of such credits would create an undue financial burden. UC Davis shall provide the following justification for not using credits in closer geographies in terms of either availability or cost prohibition.

- Lack of enough credits available in closer geographies (i.e., Sacramento County).
- Prohibitively costly credits in closer geographies defined as credits costing more than 300 percent the amount of the current costs of credits in the regulated CARB offset market.
- UC Davis documentation submitted supporting GHG credit proposals shall be prepared by individuals qualified in GHG credit development and verification and such individuals shall certify the following.
 - Proposed credits meet the criteria in California Health and Safety Code Section 38562(d)(1) and (d)(2).
 - Proposed credits meet the definitions for the criteria provided in this measure.
 - The protocols used for the credits meet or exceed the standards for stringency used in CARB protocols for offsets under the California cap-and-trade system.

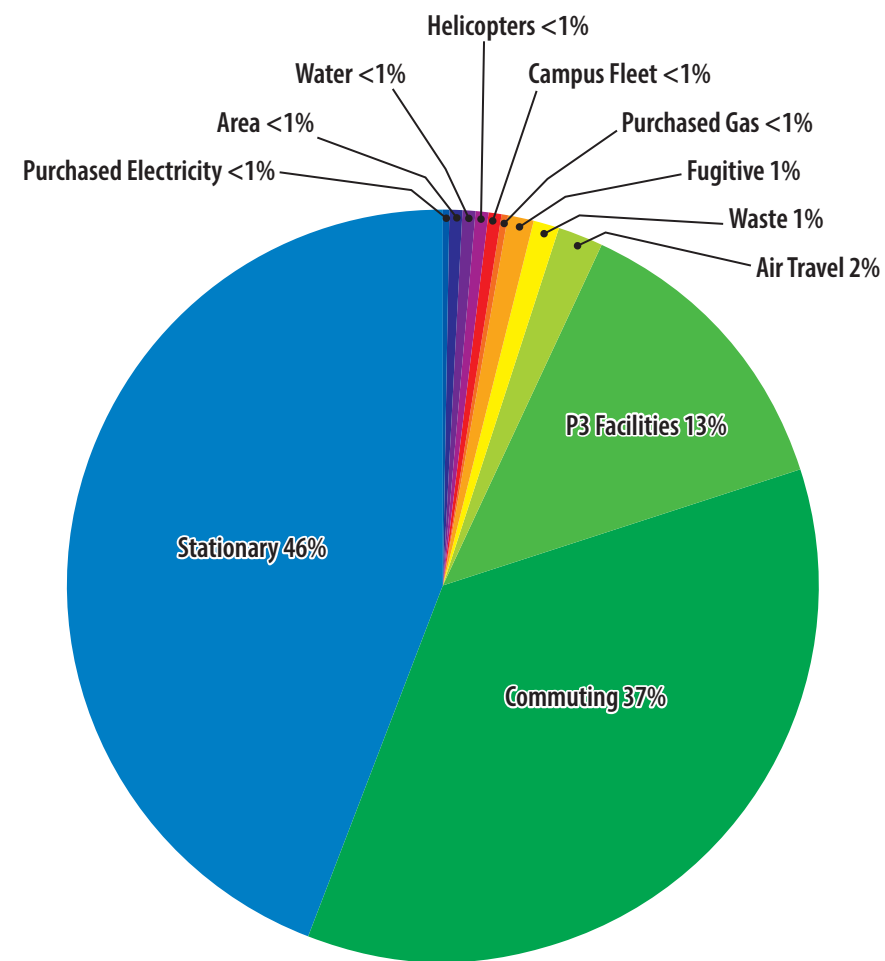
Measure Monitoring and Reporting

As a CARB-covered entity, UC Davis will ensure emissions generated by the Central Energy Plant comply with CARB's cap and trade program. Likewise, UC Davis 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 2050, as described above. These commitments will be incorporated into UC Davis' annual GHG inventory, which is used to track GHG emissions and sources on the Sacramento Campus. As part of the annual GHG inventory for the Sacramento Campus, UC Davis shall submit a report to The Regents specifying the annual amount of metric ton CO₂e reduction achieved by additional GHG reduction actions implemented pursuant to this mitigation (i.e., Option 1, onsite actions, and Option 2, offsite actions). The report must include evidence that these actions are not being used to mitigate GHG for any other project or entity.

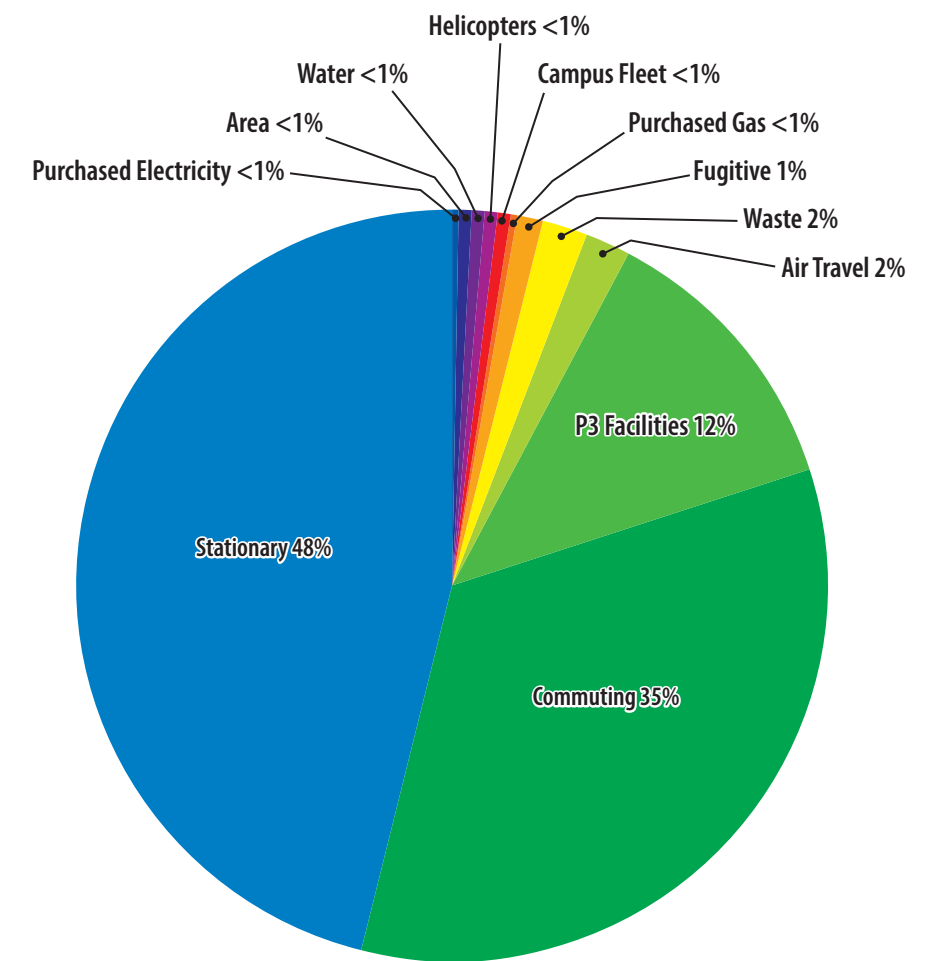
GHG reductions achieved by the onsite and offsite actions should be incorporated into the Sacramento Campus' annual GHG inventory. The estimated annual emissions shall then be compared to the measure performance standards described above to determine the level of additional GHG reductions (if any). For the identified amount of exceedance of the performance standard(s), UC Davis shall purchase carbon credits according to the requirements established above under Option 3. As and when the credits are retired, UC Davis shall document in its annual report the unique identifier of those credits showing that they have been retired and accepted by TCR.



Existing (2019) GHG Emissions by Source
(metric tons CO₂e)



Interim (2030) GHG Emissions by Source
(metric tons CO₂e)



Build (2040) GHG Emissions by Source
(metric tons CO₂e)

3.8 Hazards and Hazardous Materials

This section describes the regulatory and environmental setting for hazards and hazardous materials in the plan area, analyzes effects on hazards and hazardous materials that would result from implementation of the 2020 LRDP Update, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

Scoping comments were received in response to the Notice of Preparation regarding existing older structures that may contain hazardous materials such as lead-based paint, the need for a Phase I Environmental Site Assessment, and voluntary cleanup agreements. These issues are addressed in this section.

3.8.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, federal, state, and regional and local regulations, laws, and policies relevant to hazards and hazardous materials in the plan area.

University of California

As noted in Section 3.0.2, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the Sacramento Campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts.

Emergency Operations Plan

Under the Emergency Operations Plan (EOP), the UC Davis Sacramento Campus conducts a formal hazard vulnerability analysis (HVA) of potential hazards based on the prevailing internal and external environment within its demographic service area. The purpose of the HVA is to "identify events that could affect demand for services, the organization's ability to provide those services, the likelihood of those events occurring, and the consequences of those events."

University of California Davis Biosafety Program

Most biological research conducted at the UC Davis Sacramento Campus involves the use of relatively low-level biohazardous materials. The UC Davis Sacramento Campus has a Biosafety Program based on national standards to ensure that work with biological materials is conducted in a safe, ethical, environmentally sound, and compliant manner using the principles and functions of integrated safety management and work authorization.

Federal

The U.S. Environmental Protection Agency (EPA) is the principal federal regulatory agency responsible for the safe use and handling of hazardous materials. The key federal regulations pertaining to hazardous wastes relevant to the plan area are described below.

Hazardous Materials Transportation Act

The U.S. Department of Transportation (USDOT), the Federal Highway Administration, and the Federal Railroad Administration are the three entities that regulate the transport of hazardous materials at the federal level. The Hazardous Materials Transportation Act (49 Code of Federal Regulations [CFR] Section 171[C]) governs the transportation of hazardous materials. These regulations are promulgated by USDOT and enforced by EPA.

Resource Conservation and Recovery Act of 1976

Resource Conservation and Recovery Act (RCRA) (42 United States Code 6901–6987) provides for *cradle to grave* regulation of hazardous wastes and includes the Hazardous and Solid Waste Amendments of 1984 (HSWA). RCRA and HSWA protect human health and the environment and impose regulations on hazardous waste generators, transporters, and operators of treatment, storage, and disposal facilities (TSDFs). HSWA also requires EPA to establish a comprehensive regulatory program for underground storage tanks (USTs). The corresponding regulations in 40 CFR 260–299 provide the general framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, and dispose of hazardous waste.

Toxic Release Inventory

The Emergency Planning and Community Right-to-Know Act of 1986 and the Pollution Prevention Act of 1990 established the Toxic Release Inventory, a publicly available database that has information on toxic chemical releases and other waste management activities. EPA annually updates the inventory and lists chemical releases by industry groups and federal facilities managed.

Occupational Safety and Health Standards

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The Occupational Safety and Health Administration (OSHA) is responsible for assuring worker safety in the workplace.

OSHA regulations contain requirements concerning the use of hazardous materials in the workplace and during construction that mandate employee safety training, safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, emergency action and fire prevention plan preparation, and a hazard communication program. The hazard communication program regulations contain training and information requirements, including procedures for identifying and labeling hazardous substances, and communicating hazard information relating to hazardous substances and their handling. The hazard communication program also requires that Material Safety Data Sheets or equivalent safety information be available to employees, and that employee information and training programs be documented. These regulations require preparation of emergency action plans (escape and evacuation procedures, rescue and medical duties, alarm systems, and training in emergency evacuation).

OSHA regulations include special provisions for hazard communication to employees in research laboratories, including training in chemical work practices. Specific, more detailed training and monitoring is required for the use of carcinogens, ethylene oxide, lead, asbestos, and certain other chemicals. Emergency equipment and supplies, such as fire extinguishers, safety showers, and eye washes, must also be provided and maintained in accessible places as the need dictates.

OSHA asbestos regulations are contained in 29 CFR. Lead-based paint regulations are described in the Lead-Based Paint Elimination Final Rule (24 CFR 33), governed by the U.S. Department of Housing and Urban Development.

Cal/OSHA regulations include extensive, detailed requirements for worker protection applicable to any activity that could disturb asbestos-containing materials, including maintenance, renovation, and demolition. These regulations are also designed to ensure that people working near the maintenance, renovation, or demolition activity are not exposed to asbestos. The Sacramento Campus complies with these state requirements related to occupational safety

Spill Prevention, Control, and Countermeasures Plan

The UC Davis Sacramento Campus has prepared a spill prevention, control, and countermeasures (SPCC) plan pursuant to 40 CFR 112—Oil Pollution Prevention. The goal of this regulation is to prevent oil from reaching navigable waters and adjoining shorelines and to contain discharges of oil. The areas of the campus subject to the SPCC regulation threshold include the Central Energy Plant, Parking Structure 1 (emergency diesel fire pump), Fleet Services, Lot 7 (emergency diesel generator), the Hazardous Waste Consolidation Facility, and the Portable Diesel Generators. There are various transformers and elevator hydraulic systems located throughout the campus that are also subject to the SPCC regulation. The last SPCC update was completed in June 2019 (University of California, Davis Medical Center 2019).

State

California hazardous materials and wastes regulations are equal to or more stringent than federal regulations. EPA has granted the state primary oversight responsibility to administer and enforce hazardous waste management programs. State regulations require planning and management to ensure that hazardous materials are handled, stored, and disposed of properly to reduce risks to human health and the environment.

California Accidental Release Prevention Program

As specified in 19 California Code of Regulations (CCR) 2, Chapter 4.5, Articles 1 through 11, all businesses that handle specific quantities of hazardous materials are required to prepare a California Accidental Release Prevention (CalARP) Program risk management plan (RMP). CalARP Program RMPs are required to be updated at least every 5 years and when there are significant changes to the stored chemicals. In accordance with these provisions, the UC Davis Sacramento Campus is required to prepare an RMP for the use of aqueous ammonia above the California threshold quantity of 500 pounds at the UC Davis Sacramento Campus Central Energy Plant. The last RMP update was completed in July 2019 (UC Davis Sacramento Campus 2019).

California Health and Safety Codes

The California Environmental Protection Agency (Cal-EPA) has been granted primary responsibility by EPA for administering and enforcing hazardous materials management plans within California. Cal-EPA, more generally than EPA, defines a hazardous material as a material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released (26 CCR 25501).

Chapter 6.95 of the California Health and Safety Code requires facilities that use, produce, store, or generate hazardous substances or have a change in business inventory to have a hazardous materials management plan (HMMP) or business plan.

State regulations include detailed planning and management requirements to ensure that hazardous materials are properly handled, stored, and disposed of to reduce human health risks. In particular, the state has acted to regulate the transfer and disposal of hazardous waste. Hazardous waste haulers are required to comply with regulations that establish numerous standards, including criteria for handling, documenting, and labeling the shipment of hazardous waste (26 CCR 25160 et seq.).

Cortese List

Cal-EPA maintains the Hazardous Wastes and Substances Site (Cortese) List, a planning document used by state and local agencies and developers to comply with California Environmental Quality Act (CEQA) requirements in providing information about the locations of hazardous materials release sites. Per Government Code Section 65962.5, the Cortese List must be updated at least once annually. The California Department of Toxic Substances Control (DTSC), State Water Resources Control Board (State Water Board), and California Department of Resources Recycling and Recovery contribute to the hazardous material release site listings.

Fire Hazard Severity Zones

Government Code Section 51178 requires the California Department of Forestry and Fire Protection (CAL FIRE) to identify fire hazard severity zones in the state. Government Code Section 51179 requires a local agency to designate, by ordinance, fire hazard severity zones in its jurisdiction. Specifically, the state is required to designate Very High Fire Severity Zones in Local Responsibility Areas. Local Responsibility Areas consist of areas where local agencies are responsible for fire suppression rather than the state.

Worker Safety

The California Division of Occupational Safety and Health (Cal-OSHA) is the state agency responsible for assuring worker safety in the workplace.

Cal-OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices within the state. At sites known to be contaminated, a site safety plan must be prepared to protect workers. The site safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site. Cal-OSHA regulations include extensive, detailed requirements for worker protection applicable to any activity that could disturb asbestos-containing materials, including maintenance, renovation, and demolition. These regulations are also designed to ensure that people working near the maintenance, renovation, or demolition activity are not exposed to asbestos.

Regional and Local

Certified Uniform Program Agency

Cal-EPA can delegate responsibility for many of its programs to a local government through certification as a certified uniform program agency (CUPA). A CUPA is responsible for implementing a unified hazardous materials and hazardous waste management program. Sacramento County, through its CUPA program, requires any business that handles hazardous materials above certain thresholds to prepare a hazardous materials business plan, which must include, in part, a hazardous materials inventory, a site map, emergency response plan, and contact information.

Sacramento County Environmental Management Department

The Sacramento County Environmental Management Department (EMD) is the CUPA—the agency certified by the California Secretary of Environmental Protection—to implement the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program specified in Health and Safety Code Chapter 6.11 for Sacramento County. As such, EMD administers several programs, including the Hazardous Waste Generator, Hazardous Waste Onsite Treatment (Tiered Permitting), Spill Prevention Control and Countermeasure Plan, and the Underground Storage Tank programs.

City of Sacramento 2035 General Plan

Relevant goals and policies pertaining to hazards and hazardous materials are listed in the Public Health and Safety element of the *City of Sacramento 2035 General Plan* (City of Sacramento 2015).

Goal: Reduce exposure to hazardous materials and waste. Protect and maintain the safety of residents, businesses, and visitors by reducing, and where possible, eliminating exposure to hazardous materials and waste.

Policies:

PHS-3.1.1. Investigate Sites for Contamination. The City shall ensure buildings and sites are investigated for the presence of hazardous materials and/or waste contamination before development for which City discretionary approval is required. The City shall ensure appropriate measures are taken to protect the health and safety of all possible users and adjacent properties.

PHS-3.1.2 Hazardous Material Contamination Management Plan. The City shall require that property owners of known contaminated sites work with Sacramento County, the State, and/or Federal agencies to develop and implement a plan to investigate and manage sites that contain or have the potential to contain hazardous materials contamination that may present an adverse human health or environmental risk.

PHS-3.1.5. Clean Industries. The City shall strive to maintain existing clean industries in the city and discourage the expansion of businesses, with the exception of health care and related medical facilities that require on-site treatment of hazardous industrial waste.

PHS-3.1.8. Risks from Hazardous Materials Facilities. The City shall review proposed facilities that would produce or store hazardous materials, gas, natural gas, or other fuels to identify, and require feasible mitigation for, any significant risks. The review shall consider, at a minimum, the following: presence of seismic or geologic hazards; presence of hazardous materials; proximity to residential development and areas in which substantial concentrations of people would occur; and nature and level of risk and hazard associated with the proposed project. (City of Sacramento 2015).

Environmental Setting

This section identifies the environmental setting relevant to hazards and hazardous materials in the 2020 LRDP Update plan area.

Hazardous Materials Sites in the Project Area

Previous Investigations

The 2010 LRDP identified one site located on campus listed on the Cortese List. This site comprised 10 USTs containing diesel, gasoline, and oil. The tanks were associated with the former Fleet Services facility (demolished in the early 1990s) on V Street or the old boiler plant (demolished in 2003). All the tanks, including one that was leaking, were removed, and the site was remediated for soil contamination. The leaking UST was discovered beneath the site of Camellia Cottage, which previously had been the site of an original hospital building used for cleaning laundry. The tank contained petroleum hydrocarbons, which appeared to have been heating oil for the laundry building boiler. The contaminated soil was excavated and disposed in 2003 (RGA Environmental 2005). Site remediation is considered complete and the case was closed on April 7, 2011 (State Water Resources Control Board 2020a, 2020b).

Current Investigations

To identify potential hazardous sites within the project area, government databases of hazardous waste sites and facilities were reviewed. This search of the Department of Toxic Substances Control's (DTSC) EnviroStor database and the State Water Board's GeoTracker database covered the plan area and adjacent properties (Department of Toxic Substances Control 2020). This assessment resulted in the identification of three potential hazardous materials sites. However, these sites have been investigated and remedial efforts completed. As such, these sites no longer pose a threat.

The first site is located at 2751 Stockton Boulevard. Soil contamination from a leaking UST containing gasoline was reported in 1994. No other information was found in the records search. The GeoTracker database shows the site status as closed in 2004 (State Water Resources Control Board 2020c).

The second site is located at 2800 49th Street. A release of gasoline/diesel through a leaking UST was reported in June 2003. Petroleum hydrocarbons were found in soil samples collected below tank dispensers. Modifications to stop the leak commenced the same day, and the case was closed on March 3, 2005 (State Water Resources Control Board 2020d).

Contamination of aquifer from gasoline was reported at 2978 Stockton Boulevard on March 18, 1987. Site assessment and remediation was conducted in June of 1987, and the site re-assessed in September the same year. This case was closed as of November 8, 1997 (State Water Resources Control Board 2020e).

Hazardous Chemicals

As a health care facility and research center, the UC Davis Sacramento Campus utilizes various chemical and radioactive materials. The UC Davis Office of Environmental Health and Safety (UC Davis EH&S) maintains a computerized inventory of hazardous chemical materials stored onsite. The UC Davis Sacramento Campus EH&S submits applicable portions of this inventory to the County of Sacramento Department of Environmental Management as part of its hazardous materials

business plans (HMBPs). There are four HMBPs for the UC Davis Sacramento Campus: Central Plant, Fleet Services, School of Medicine facilities, and the remainder of the campus. The HMBPs list the names and quantities of all hazardous chemical materials found on campus in quantities per building greater than 55 gallons (for liquids), 500 pounds (for solids), or 200 cubic feet (for gases).

Six USTs and aboveground storage tanks are located onsite and contain fuel, waste oil, and aqueous ammonia. All tanks meet federal, state, and local regulatory standards.

Radioactive Materials and Wastes

Radioactive materials contain atoms with unstable nuclei that spontaneously emit ionizing radiation to increase their stability. Radioactive wastes are radioactive materials that are discarded, including waste in storage, or abandoned. Radioactive materials used at the UC Davis Sacramento Campus are also monitored by the EH&S in accordance with the federal Radiation Control Law and by the California Department of Public Health (CDPH). Radioactive materials are used at the UC Davis Sacramento Campus in research or diagnostic applications, as well as patient treatment. These activities involve handling relatively small quantities of radioactivity. Radioactive materials are monitored closely by EH&S in accordance with the federal Radiation Control Law and by the CDPH. As required by the Radiation Control Law, the UC Davis Sacramento Campus has a Radiation Safety Program providing protective measures against exposure and a routine monitoring program.

Biohazardous Materials and Wastes

Biohazardous materials are materials that contain certain infectious agents (microorganisms, bacteria, molds parasites, viruses) that normally cause or significantly contribute to increased human mortality, or organisms that are capable of being communicated by invading and multiplying in body tissues. Biohazardous materials used for research at the UC Davis Sacramento Campus include infectious agents, parasites, and other biological agents. Different types of biohazardous materials are used for hospital and clinical operations and for a wide range of biological and related research performed onsite. Research activities on the UC Davis Sacramento Campus may also involve recombinant technology, recombinant genomic materials, and genetically modified organisms. Transgenic organisms result when the deoxyribonucleic acid (DNA) from different existing organisms (plants, animals, insects, etc.) is combined using recombinant DNA techniques.

Lead-Based Paint and Asbestos Containing Materials

Hazardous materials are commonly found in building materials that may be affected during demolition and renovation activities associated with redevelopment. Prior to 1978, lead compounds were commonly used in interior and exterior paints. Prior to the 1980s, building materials often contained asbestos fibers, which were used to provide strength and fire resistance.

Demolition of older buildings has the potential to release lead particles, asbestos fibers, and/or other hazardous materials to the air where they may be inhaled by construction workers and the general public. Federal and state regulations govern the demolition of structures where lead or material containing lead is present. During demolition, lead-based paint that is securely adhering to wood or metal may be disposed of as demolition debris, which is a non-hazardous waste. Loose and peeling paint must be disposed of as a California and/or federal hazardous waste if the concentration of lead exceeds applicable waste thresholds. State and federal construction worker health and safety regulations require air monitoring and other protective measures during demolition activities where lead-based paint is present.

The 2020 LRDP Update involves demolition of various buildings on the Sacramento Campus (see Appendix D). Between 2020 and 2030, the Housestaff building (constructed in 1916), the North/South Tower (constructed in 1951) and the Cypress Building (constructed in 1964) would be demolished.

Schools

Hazardous emissions and accidental release or combustion of hazardous materials near existing schools could result in health risks or other dangers to students. The closest school to the plan area is the Language Academy of Sacramento Charter School (formerly Marian Anderson Elementary School) located adjacent to the plan area at 2850 49th Street, Sacramento.

Airports

Airport-related hazards are generally associated with aircraft accidents, particularly during takeoff and landing. Airport operation hazards include incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport. The closest airport is the Executive Airport located approximately 2.75 miles southwest of the plan area. Sacramento International Airport is approximately 11 miles northwest of the plan area.

Evacuation and Emergency Routes

The UC Davis Health Education & Research Emergency Action & Evacuation Plan (2019) outlines the preparation and response to a variety of threats and hazards including the need for evacuation procedures. Access to the campus for general traffic from V Street is limited to 45th and 49th Streets. Access from Stockton Boulevard is on X Street, Y Street, 2nd Avenue, and 4th Avenue. Access on the south side of campus on Broadway is at 49th Street.

Fire-Related Hazards

The plan area is an urban area consisting of primarily paved surfaces and landscaped open space. CAL FIRE has designated the plan area as a Local Responsibility Area and is not considered to have a high fire risk (California Department of Forestry and Fire Protection 2008).

3.8.2 Environmental Impacts

This section describes the potential environmental impacts associated with hazards and hazardous materials that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

The baseline for hazards and hazardous materials includes the hazards and hazardous materials that currently exist in the plan area and that are identified in sources cited in Section 3.8.1, *Environmental Setting*. This section provides a qualitative discussion of the potential risks involving hazards and hazardous materials as a result of the 2020 LRDP Update.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- 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.
- Result in hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Place project-related facilities on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and resulting creation of a significant hazard to the public or the environment.
- Place project-related facilities within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, resulting in a safety hazard or excessive noise for people residing or working in the project area.
- Impair implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

Issues Not Evaluated Further

Previous analysis conducted for the 2010 LRDP Final EIR concluded that development of the 2010 LRDP would not result in an airport-related safety hazards for people working in campus facilities. The 2020 LRDP Update plan area is not located within 2 miles of an airport or airport land use plan. The closest airport is the Executive Airport located approximately 2.75 miles southwest of the plan area. Therefore, the threshold of significance for a safety hazard or excessive noise near the project does not apply and is not evaluated further.

The plan area is not located in or near a state responsibility area or in a Very High Fire Severity Zone. The plan area is designated as a Local Responsibility Area (California Department of Forestry and Fire Protection 2008) and is in a developed, urban setting consisting primarily of paved surfaces and landscaping. As a result, the 2020 LRDP Update would not expose people or structures to a significant risk associated with wildland fires and therefore, no further analysis is required.

Impacts and Mitigation Measures

Impact LRDP-HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials

Construction and operation of the development identified in the 2020 LRDP Update would result in transport, use, and disposal of hazardous materials to and from the plan area. Adherence to existing regulations and compliance with safety standards that are either currently in place or would be required for new projects would ensure this impact would be **less than significant**.

Hazardous Materials Use during Construction

Implementation of the 2020 LRDP Update would include construction and renovation of facilities that could result in the routine transport, use, or disposal of hazardous materials. Construction and operation of these projects would involve small quantities of commonly used materials, such as fuels and oils, to operate construction equipment. This type of use is not considered routine such that the use is regularly or frequently conducted. Accidental releases of small quantities of these substances during operation and maintenance could contaminate soils and degrade the quality of surface water and groundwater, or be released into the air, resulting in a potential public safety hazard. However, consistent with applicable laws and regulations, as discussed above in *Regulatory Setting* in Section 3.8.1, *Existing Conditions*, the transportation, handling, and disposal of these materials would comply with regulations enforced by CUPA and Cal-OSHA. In addition, the implementation of standard best management practices under the storm water pollution protection plan (SWPPP) (see Section 3.9.1, *Hydrology and Water Quality*, for a discussion of SWPPPs) would further reduce the potential of accidental release or exposure. This impact would be **less than significant**.

Hazardous Materials Use during Operation

The 2010 LRDP Final EIR found that implementation of the 2010 LRDP would increase the routine transport, use, storage, and disposal of hazardous materials but would not create a significant hazard to the public or environment under routine or reasonably foreseeable upset and accident conditions. Similarly, implementation of the 2020 LRDP Update would result in the continued transport, use, and disposal of hazardous materials to and from the plan area. The expansion of ambulatory care, research facilities, and the hospital would increase the total amount of hazardous materials transported to, stored, and used at the UC Davis Sacramento Campus.

The types of hazardous materials used would be comparable to those currently used in laboratories and the hospital (e.g., chemicals, biohazardous and radioactive materials and wastes). All applicable federal and state regulations and standards would continue to be implemented under the 2020 LRDP Update. Impacts relating to the use and disposal of hazardous materials during project operation would be **less than significant**.

Biohazardous Materials

The types of biohazardous materials to be used under 2020 LRDP Update implementation would be similar to those currently in use under the 2010 LRDP, though use would possibly increase because of the addition of research and hospital facilities. As described in the 2010 LRDP Final EIR, biohazardous materials (e.g., medical waste, cell plates, absorbents, needles) are regulated and

handled under the Biosafety Program, which ensures safe handling and disposal of biohazardous materials.

Medical wastes generated at the hospital could include blood and blood products, tissues and specimens, needles, and infectious items. These materials would continue to be processed at the medical waste treatment facility located on the UC Davis Sacramento Campus. Certain items, such as the pharmaceutical and chemotherapy wastes and surgery specimens, are transported offsite for treatment by a licensed medical waste treatment vendor.

All applicable federal and state regulations and standards would continue to be implemented under the 2020 LRDP Update. Impacts relating to the use and disposal of biohazardous materials would be **less than significant**.

Radioactive Materials Use during Operation

As discussed in Section 3.8.1, *Existing Conditions*, radioactive materials used for patient treatment or research at the UC Davis Sacramento Campus are regulated and monitored by the EH&S in accordance with the federal Radiation Control Law and by the California Department of Public Health. The 2020 LRDP Update, with the addition of the hospital, could increase the use of radioactive materials. However, the UC Davis Sacramento Campus would continue to follow the Radiation Safety Program providing protective measures against exposure and direction for disposal. Because the 2020 LRDP Update would comply with existing safety controls, plans, and procedures, the potential to expose campus occupants to substantial health or safety risks is low. The 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR, and this impact would be **less than significant**.

Hazardous Materials Transport

It is likely that the volume of hazardous materials transported to and from campus would increase as a result of the 2020 LRDP Update. However, as described in Section 4.7.3.3, *Hazardous Materials Transportation* in the 2010 LRDP Final EIR, the Hazardous Waste Collection Facility (HWCF) handles most hazardous materials generated at the hospital, clinics, and laboratories, thereby limiting offsite transportation. This would continue under the 2020 LRDP Update. All transportation of hazardous materials would continue to be transported by the UC Davis Sacramento Campus EH&S or a licensed hazardous waste contractor. As described above and in Chapter 2, *Project Description*, medical, chemical, and radioactive waste would be packaged and labeled and categorized for transport to appropriate off-campus disposal sites.

Adherence to existing regulations and compliance with the safety procedures mandated by applicable federal, state, university, and local laws and regulations would minimize the risks resulting from the routine transportation, use, storage, or disposal of hazardous materials or hazardous wastes associated with construction and implementation of the 2020 LRDP Update.

Based on the above analysis, the 2020 LRDP Update would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. The impact would be **less than significant**.

The 2010 LRDP Final EIR concluded that impacts related to hazards and hazardous materials would be less than significant. Therefore, the 2020 LRDP Update would not result in a new or more severe impact.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-HAZ-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

Site workers, the public, and the environment could be inadvertently exposed to preexisting onsite contaminants during construction in the plan area. Structure demolition and ground disturbing activities associated with construction may result in the release or disturbance of contaminated soil or hazardous building materials. Mitigation Measure LRDP-HAZ-2 would reduce this impact. Therefore, this impact would be **less than significant with mitigation**.

Known Sites of Contamination

Current investigations identified three new potential hazardous materials sites. However, these sites have been investigated and cleanup of contaminated soils and/or groundwater completed. As a result, these cases are considered closed and would no longer pose a threat to the public or environment.

As discussed in the environmental setting above, past land use on the UC Davis Sacramento Campus included leaking storage tanks that contaminated the soil and/or groundwater. Historically, there was less stringent oversight regarding the disposal of hazardous materials. As such, it is possible that other, previously unknown sites of soil and/or groundwater contamination exist in the plan area. Ground disturbing activities, such as grading and excavation, may expose construction workers and the general public to hazardous materials that may result in health effects. Potential hazards to human health include ignition of flammable liquids or vapors, inhalation of toxic vapors in confined spaces such as trenches, and skin contact with contaminated soil or water. Conducting a Phase I Environmental Site Assessment would ensure this risk is minimized. This impact would be **less than significant with mitigation**.

Demolition Hazards

Demolition of buildings as described in the 2020 LRDP Update could expose construction workers and the public to asbestos-containing building materials, lead-based paint, and other hazardous building materials containing polychlorinated biphenyls (PCBs). Buildings constructed before the 1980s could contain asbestos or lead-based paint when these materials were still being manufactured and used. Some buildings and industrial facilities still use asbestos today. As such, there is a potential for encountering asbestos-containing building materials in the roof/ceiling and floor tiles and building insulation. Potential exposure of construction workers to hazardous materials or wastes is considered to be a significant impact because of the possible threat to human health from the handling of these materials.

Standard procedures as outlined in the 2010 LRDP Final EIR would be followed under the 2020 LRDP Update and include a pre-demolition survey of structures to determine if any contain hazardous materials. If hazardous materials are identified, special handling of these materials would be managed and/or removed and disposed of by qualified contractors in accordance with applicable regulations. This impact would be **less than significant**.

Implementation of Mitigation Measure LRDP-HAZ-2 would reduce impacts related to undocumented contamination sites to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation**.

The 2010 LRDP Final EIR concluded that impact related to hazards and hazardous materials would be less than significant. Therefore, with mitigation, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-HAZ-2: Prepare a Phase I Environmental Site Assessment

To minimize the risk of encountering unknown contamination during construction under the 2020 LRDP Update, the UC Davis Sacramento Campus would retain an environmental professional to prepare a Phase I Environmental Site Assessment before all ground-disturbing construction in areas not previously investigated. A Phase I Environmental Site Assessment would conform with the American Society for Testing and Materials Standard Practice E1527-05 and include at a minimum the following site assessment requirements.

- An onsite visit to identify current conditions (e.g., vegetative dieback, chemical spill residue, presence of above- or underground storage tanks).
- An evaluation of possible risks posed by neighboring properties.
- Interviews with persons knowledgeable about the site's history (e.g., current or previous property owners, property managers).
- An examination of local planning files to check prior land uses and any permits granted.
- File searches with appropriate agencies (e.g., State Water Board, fire department, county health department) having oversight authority relative to water quality and groundwater and soil contamination.
- Examination of historical aerial photography of the site and adjacent properties.
- A review of current and historic topographic maps of the site to determine drainage patterns.
- An examination of chain-of-title for environmental liens and/or activity and land use limitations.

If the Phase I Environmental Site Assessment indicates likely site contamination, a Phase II Environmental Site Assessment will be performed (also by an environmental professional).

A Phase II Environmental Site Assessment would comprise the following.

- Collection of original surface and/or subsurface samples of soil, groundwater, and building materials to analyze for quantities of various contaminants.
- An analysis to determine the vertical and horizontal extent of contamination (if the evidence from sampling shows contamination).

If contamination is uncovered as part of Phase I or II Environmental Site Assessments, remediation per EPA's RCRA regulations in 40 CFR Parts 260–299 will be required, and materials will be properly managed and disposed of prior to construction.

Any contaminated soil identified on a project site must be properly disposed of in accordance with Department of Toxic Substances Control regulations in effect at the time.

If, during construction, soil or groundwater contamination is suspected, construction activities in the vicinity of the discovery will cease and appropriate health and safety procedures will be implemented, including the use of appropriate personal protective equipment (e.g., respiratory protection, protective clothing, helmets, goggles).

Impact LRDP-HAZ-3: Result in hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school

Although hazardous materials and waste could be handled within 0.25 mile of an existing or proposed school as a result of implementation of the 2020 LRDP Update, handling, storage, and disposal of hazardous materials associated with the 2020 LRDP Update would be subject to campus safety programs and procedures. This impact would be **less than significant**.

The Language Academy of Sacramento Charter School (formerly Marian Anderson Elementary School) is adjacent to the plan area at 2850 49th Street, Sacramento. The UC Davis Sacramento Campus has been operating on its campus adjacent to the school since 1978, and there have been no incidents involving the release of hazardous materials that have affected the school or required evacuation or any other emergency response to the school site. Hazardous materials and waste would continue to be handled within 0.25 mile of an existing school under the project. However, continued compliance with existing safety plans, programs, practices, and procedures, as discussed in Section 3.8.1 (e.g., UC Davis EH&S plan) would reduce potential impacts involving hazardous materials/wastes within 0.25 mile of a school to a **less-than-significant** level.

The 2010 LRDP Final EIR concluded that impacts related to hazardous materials or emissions within 0.25 acre of a school would be less than significant. Therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-HAZ-4: Place project-related facilities on a site that is included on a list of hazardous materials sites, and resulting creation of a significant hazard to the public or the environment

Since publication of the 2010 LRDP Final EIR, three new hazardous waste sites have been identified. However, these sites have been investigated, cleanup has been completed, and they would not pose a threat to the onsite daily population associated with the Sacramento Campus, including new residents. Therefore, this impact would be **less than significant**.

The 2010 LRDP Final EIR found that new facilities would not be located on a site that is included on a list of hazardous materials site per Government Code Section 65962.5 and that the potential to encounter soil and groundwater contamination during construction was less than significant.

Previous government database searches revealed leaking USTs within the plan area that have since been removed and soil and groundwater contamination remediated. Current investigations identified three new potential hazardous materials sites. However, these sites have been investigated and cleanup of contaminated soils and/or groundwater completed. As a result, these cases are considered closed and would no longer pose a threat to the public or environment. This impact would be **less than significant**.

The 2010 LRDP Final EIR concluded that impacts related to listed hazardous materials sites would be less than significant. Therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-HAZ-5: Impair implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan

Implementation of projects identified in the 2020 LRDP Update could result in short-term, temporary impacts on street traffic because of potential extension of construction activities into the right-of-way. This could result in a reduction in the number of lanes or temporary closure of certain road segments. This would occur only during construction activities adjacent to roads. This impact would be **less than significant**.

The 2010 LRDP Final EIR found that implementation of the 2010 LRDP would not interfere with emergency response or evacuation because existing emergency response plans are adequate to prepare, mitigate, and respond to any type of threat or hazard or incident that could affect the demand for services provided by the UC Davis Sacramento Campus. Under the 2020 LRDP Update, the UC Davis Sacramento Campus would continue to follow the UC Davis Health Education & Research Emergency Action & Evacuation Plan (2019). Further, implementation of the 2020 LRDP Update would not result in the construction of any facilities that would interfere with emergency vehicle access to the campus. If needed, alternate routes would be established before any temporary closures and routes for evacuation, in case of an emergency, would be established and remain open. The impact would be **less than significant**.

The 2010 LRDP Final EIR concluded that impacts on emergency response or evacuation plans would be less than significant. Therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

3.9 Hydrology and Water Quality

This section describes the regulatory and environmental setting for hydrology and water quality in the plan area, analyzes effects on hydrology and water quality that would result from implementation of the 2020 LRDP Update, and provides mitigation measures, if applicable, to reduce the effects of any potentially significant impacts.

In response to the Notice of Preparation for this Supplemental EIR, commenters expressed the following concerns related to hydrology and water quality.

- Wastewater discharges must comply with the Antidegradation Policy and the Antidegradation Implementation Policy in the Central Valley Regional Water Quality Control Board's Basin Plan; antidegradation analysis is a mandatory element in the NPDES and WDRs permitting process and these impacts need to be evaluated.
- Construction General Permit will require development and implementation of a SWPPP.
- Phase I and II Municipal Separate Storm Sewer System (MS4) Permits will be required.
- An Industrial Storm Water General Permit will be required.
- A Dewatering Permit will be required.

3.9.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, federal, state, and regional and local regulations, laws, and policies relevant to hydrology and water quality on the Sacramento Campus.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, 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.

As a state entity, the University is generally exempt from compliance with local land use regulations by the State constitution, including general plans, zoning and ordinances. The only local plan applicable to the Sacramento Campus is the LRDP.

Federal

Clean Water Act

The federal Clean Water Act (CWA) was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The CWA directs

states to establish water quality standards for all “waters of the United States” and to review and update such standards on a triennial basis.

The U.S. Environmental Protection Agency (EPA) has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) program (discussed below), to the State Water Resources Control Board (State Water Board) and the Regional Water Quality Control Boards (Regional Water Boards). The State Water Board establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. The Regional Water Boards develop and implement water quality control plans (basin plans) that identify the beneficial uses of surface and ground waters, water quality characteristics, and water quality problems.

Section 303(d) and Total Maximum Daily Loads. The CWA contains two strategies for managing water quality. One is a technology-based approach that includes requirements for states to maintain a minimum level of pollutants using the best available technology. The other is a water quality-based approach that relies on evaluating the condition of surface waters and setting limitations on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA bridges these two strategies. Section 303(d) requires that states make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list (and where the EPA administrator deems they are appropriate), states develop total maximum daily loads (TMDLs). TMDLs are established at the level necessary to implement the applicable water quality standards. The CWA does not expressly require the implementation of TMDLs. However, federal regulations require that an implementation plan be developed along with the TMDL and Sections 303(d), and 303(e), and their implementing regulations require that approved TMDLs be incorporated into basin plans. EPA has established regulations (40 Code of Federal Regulations [CFR] 122) that require that NPDES permits be revised to be consistent with any approved TMDL.

Section 401—Water Quality Certification. Section 401 of the CWA requires that an applicant pursuing a federal permit to conduct an activity that may result in a discharge of a pollutant obtain a Water Quality Certification (or waiver). A Water Quality Certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States. Water Quality Certifications are issued by one of the nine geographically separated Regional Water Boards in California. Under the CWA, the Regional Water Board must issue or waive a Section 401 Water Quality Certification for a project to be permitted under CWA Section 404.

Section 402—National Pollutant Discharge Elimination System. The 1972 amendments to the federal Water Pollution Control Act established the NPDES permit program to control discharges of pollutants from point sources (Section 402). The 1987 amendments to the CWA created a new section of the CWA devoted to stormwater permitting (Section 402[p]). EPA has granted the State Water Board and Regional Water Boards primacy in administering and enforcing the provisions of CWA and NPDES. NPDES is the primary federal program that regulates point-source and nonpoint-source discharges to waters of the United States.

NPDES General Permit for Construction Activities. Most construction activities that disturb 1 acre of land or more are required to obtain coverage under the NPDES General Permit for Construction Activities (Construction General Permit). The State Water Board has issued a statewide Construction

General Permit (Order No. 2009-0009-DWQ, NPDES No. CAR000002, as amended by 2010-0014-DWQ and 2012-0006-DWQ), adopted September 2, 2009. Construction activities subject to the NPDES Construction General Permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation, that result in soil disturbances of at least 1 acre of total land area. The NPDES Construction General Permit requires the applicant to file a notice of intent (NOI) to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP includes a site map and a description of proposed construction activities, along with a demonstration of compliance with relevant local ordinances and regulations, and an overview of the best management practices (BMPs) that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Permittees are further required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

Safe Drinking Water Act

The 1986 federal Safe Drinking Water Act requires each state to develop a wellhead protection plan to describe how areas around wells will be protected from potential contamination. A major element of a wellhead protection program is the determination of protection zones around public supply wellheads. Within these zones, potential protection measures could include limitations on land uses to preclude industrial or agricultural uses with the potential to result in spills of chemicals or overuse of fertilizers and other chemicals.

National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) is responsible for determining, based on U.S. Army Corps of Engineers studies, flood elevations, and floodplain boundaries. FEMA is also responsible for distributing the Flood Insurance Rate Maps (FIRMs), which are used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas, including the 100-year floodplain. FEMA allows non-residential development in the floodplain; however, construction activities are restricted within the flood hazard areas, depending on the potential for flooding within each area.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is established and implemented by the State Water Board and nine Regional Water Boards. Waters of the state are defined more broadly than “waters of the United States;” they are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. This includes waters in both natural and artificial channels. The act requires projects that are discharging, or proposing to discharge, wastes that could affect the quality of the state’s water to file a waste discharge report with the appropriate Regional Water Board. The Porter-Cologne Act also requires that the State Water Board or a Regional Water Board adopt basin plans for the protection of water quality. The *Water Quality Control Plan for the Sacramento River Basin and The San Joaquin River Basin* (Basin Plan) specifies region-wide and water body-specific beneficial uses and sets numeric and narrative water quality objectives for several substances and parameters in numerous surface waters in its region (Central Valley Regional Water Quality Control Board 2018). The Basin Plan also establishes beneficial water uses for groundwater basins within the region. The 2020 LRDP Update for the Sacramento Campus

is in the jurisdiction of the Central Valley Regional Water Board. The Basin Plan was last updated in 2018.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act of 2014 (SGMA) is a comprehensive three-bill package that Governor Jerry Brown signed into California state law in September 2014. The SGMA provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for state intervention only if necessary to protect the resource. The plan is intended to ensure a reliable groundwater water supply for California for years to come. SGMA requires the formation of local Groundwater Sustainability Agencies (GSA), which are required to adopt groundwater sustainability plans (GSPs) to manage the sustainability of groundwater basins. GSAs for all high- and medium-priority basins, as identified by DWR, must adopt a GSP, or submit an alternative to a GSP. SGMA also requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge.

The UC Davis Sacramento Campus overlies the South American groundwater subbasin, which is designated as a high-priority basin. Groundwater in the basin is managed under the Sacramento Central Groundwater Authority (SCGA) GSA. SCGA adopted its groundwater management plan on November 8, 2006. The Central Sacramento County Groundwater Management Plan manages groundwater basins in Sacramento County including the South American groundwater subbasin. The SCGA submission of an alternative to a GSP for the South American Subbasin was denied in 2019. A new GSP for the basin is currently in process.

Regional and Local

Sacramento Municipal Separate Storm Sewer Systems

Phase I Municipal Separate Storm Sewer Systems (MS4) regulations cover municipalities with more than 100,000 residents, certain industrial processes, or construction activities that disturb an area of 5 acres or more. Phase II “small” MS4 regulations require SWMPs to be developed by municipalities with fewer than 100,000 residents and construction activities that disturb 1 or more acres of land.

MS4 permits require cities and counties to develop and implement programs and measures, including management practices, control techniques, system design and engineering methods, and other measures, as appropriate, to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible. As part of permit compliance, permit holders create stormwater management plans (SWMPs), also known as stormwater quality improvement programs (SQIPs), for their respective locations. These plans outline the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. The requirements may include multiple measures to control pollutants in stormwater discharges. During implementation of specific projects under the program, project applicants are required to follow the guidance contained in the SWMPs/SQIPs, as defined by the permit holder in that location. Sacramento County is considered a Phase I MS4 permittee under the State Water Board’s waste discharge requirements for stormwater discharges (NPDES Order R5 2015-0023; NPDES No. CAS082597).

Older sections of Sacramento also collect stormwater in the combined sewer pipes, as described in Section 3.9.1, *Environmental Setting*, which conveys both wastewater and storm drain runoff in a single pipe. Discharges from the combined system would comply with the waste discharge requirements for the City of Sacramento Combined Wastewater Collection and Treatment System (NPDES Order R5-2015-0045; NPDES No. CA0079111).

However, facilities with no exposure of the facility's industrial activities, equipment, and materials to stormwater may submit a No Exposure Certification (NEC) to the State Water Resources Control Board, in accordance with the requirements of the Industrial Activities Stormwater General Permit (General Permit 97-03-DWQ). Under the NEC, the Sacramento Campus is required to eliminate unauthorized non-storm water discharges such as leaks or spills, and protect industrial materials and activities from exposure to precipitation and/or runoff. Facility operators are required to inspect and evaluate their facilities annually, maintain records of those evaluations, and certify annually that the NEC eligibility requirements for the Campus are continuously being met. If the regional water resources control board denies the NEC, or if the facility operator determines that NEC eligibility requirements are no longer being met, the facility operator must collect and analyze samples from two storm events during each wet season and report results to the State Water Resources Control Board. Stormwater runoff from the 2020 LRDP Update plan area is managed under the requirements of an NEC, and not via the Sacramento County Phase I MS4 permit. The Sacramento Campus's first NEC evaluation was completed in 2015.

General Waste Discharge Requirements/NPDES Permit for Limited Threat Discharges to Surface Waters

The Central Valley Regional Board is no longer accepting applications for coverage under the Low Threat General Order. New applicants must apply for coverage under the Limited Threat General Order (General Waste Discharge Requirements/NPDES Permit for Limited Threat Discharges to Surface Waters, Order R5-2016-0076/NPDES Permit No. CAG995002; amended by Order R5-2018-0002).

Discharges of the following wastewaters may obtain authorization under this General Order. To obtain authorization for discharges to surface water, Dischargers must submit a complete NOI.

- Tier 1A: Relatively clean discharges of less than 0.25 million gallons per day (MGD) and/or less than 4 months in duration.
- Tier 1B: Relatively clean discharges greater than or equal to 0.25 MGD and/or greater than or equal to 4 months in duration.
- Tier 2: Discharges that may contain toxic organic constituents, volatile organic compounds, pesticides, inorganic constituents, chlorine, and/or other chemical constituents that require treatment prior to discharge.
- Tier 3: Discharges of wastewater from hard rock mines.

Sacramento Area Flood Control Agency

The Sacramento Area Flood Control Agency (SAFCA) was formed in 1989 to address the Sacramento area's vulnerability to catastrophic flooding. This vulnerability was exposed during the record flood of 1986, when Folsom Dam exceeded its normal flood control storage capacity and several area levees nearly collapsed under the strain of the storm. In response, the City of Sacramento, Sacramento County, Sutter County, the American River Flood Control District, and Reclamation

District (RD) No. 10000 created SAFCA through a Joint Exercise of Powers Agreement to provide the Sacramento region with increased flood protection along the American and Sacramento Rivers.

City of Sacramento 2035 General Plan

As a State entity, the University is exempted by the state constitution from compliance with local land use regulations, including general plans and zoning, whenever using property under its control in furtherance of its educational mission, and therefore references to the City's General Plan are only to provide context for the impact analysis. Relevant goals and policies pertaining to water quality, hydrology, and floodplains are listed in the Environmental Resources Element and the Environmental Constraints Element of the *City of Sacramento 2035 General Plan* (City of Sacramento 2015).

GOAL ER 1.1: Water Quality Protection. Protect local watersheds, water bodies and groundwater resources, including creeks, reservoirs, the Sacramento and American Rivers, and their shorelines.

Policy ER 1.1.1: Conservation of Open Space Areas. The City shall conserve and where feasible create or restore areas that provide important water quality benefits such as riparian corridors, buffer zones, wetlands, undeveloped open space areas, levees, and drainage canals for the purpose of protecting water resources in the city's watershed, creeks, and the Sacramento and American rivers.

Policy ER 1.1.2: Regional Planning. The City shall continue to work with local, State, and Federal agencies and private watershed organizations to improve water quality.

Policy ER 1.1.3: Stormwater Quality. The City shall control sources of pollutants and improve and maintain urban runoff water quality through storm water protection measures consistent with the City's National Pollution Discharge Elimination System (NPDES Permit).

Policy ER 1.1.4: New Development. The City shall require new development to protect the quality of water bodies and natural drainage systems through site design (e.g., cluster development), source controls, storm water treatment, runoff reduction measures, best management practices (BMPs) and Low Impact Development (LID), and hydromodification strategies consistent with the city's NPDES Permit.

Policy ER 1.1.5: Limit Stormwater Peak Flows. The City shall require all new development to contribute no net increase in stormwater runoff peak flows over existing conditions associated with a 100-year storm event.

Policy ER 1.1.6: Post-Development Runoff. The City shall impose requirements to control the volume, frequency, duration, and peak flow rates and velocities of runoff from development projects to prevent or reduce downstream erosion and protect stream habitat.

Policy ER 1.1.7: Construction Site Impacts. The City shall minimize disturbances of natural water bodies and natural drainage systems caused by development, implement measures to protect areas from erosion and sediment loss, and continue to require construction contractors to comply with the City's erosion and sediment control ordinance and stormwater management and discharge control ordinance.

Policy ER 1.1.9: Groundwater Recharge. The City shall protect open space areas that are currently used for recharging groundwater basins, have the potential to be used for recharge, or may accommodate floodwater or stormwater.

GOAL EC 2.1: Flood Protection. Protect life and property from flooding.

Policy EC 2.1.1: Interagency Flood Management. The City shall work with local, regional, State, and Federal agencies to maintain an adequate information base, prepare risk assessments, and identify strategies to mitigate flooding impacts.

Policy EC 2.1.3: Interagency Levee Management. The City shall work with local, regional, State, and Federal agencies to ensure new and existing levees are adequate in providing flood protection.

Policy EC 2.1.4: 200-year Flood Protection. The City shall work with local, regional, State, and Federal agencies in securing funding to achieve by 2025 at least 200-year flood protection for all areas of the city.

Policy EC 2.1.5: Funding for 200-year Flood Protection. The City shall continue to cooperate with local, regional, State, and Federal agencies in securing funding to obtain the maximum level of flood protection that is practical, with a minimum goal of achieving at least 200-year flood protection as quickly as possible.

Policy EC 2.1.6: Floodplain Capacity. The City shall preserve urban creeks and river to maintain existing floodplain capacity.

Policy EC 2.1.8: Floodplain Requirements. The City shall regulate development within floodplains in accordance with State and Federal requirements and maintain the City's eligibility under the National Flood Insurance Program.

Policy EC 2.1.11: New Development. The City shall require evaluation of potential flood hazards prior to approval of development projects and shall regulate development in urban and urbanizing areas per state law addressing 200-year level of flood protection. (City of Sacramento 2015)

City of Sacramento Stormwater Ordinances

Sacramento Municipal Code Section 13.16, Stormwater Management and Discharge Control, and Section 15.88, Grading, Erosion, and Sediment Control are pertinent to hydrology and water quality on the Sacramento campus. The purpose of the stormwater management and discharge control ordinance is to control non-stormwater discharges to the stormwater conveyance system; eliminating discharges to the stormwater conveyance system from spills, dumping, or disposal of materials other than stormwater; and reducing pollutants in urban stormwater discharges to the maximum extent practicable. The ordinance is consistent with the federal Clean Water Act, Porter-Cologne Act, and the Sacramento County NPDES Phase I MS4 permit.

The purpose of the grading ordinance is to regulate grading to avoid pollution of watercourses with nutrients, sediments, or other materials generated or caused by surface water runoff. The ordinance complies with the Sacramento County NPDES Phase I MS4 permit. The grading ordinance ensures that the intended use of a graded site within the city limits is consistent with the general plan and is intended to control all aspects of grading operations in the city.

City of Sacramento Stormwater Quality Improvement Program

The City of Sacramento Stormwater Quality Improvement Program is a comprehensive program composed of various program elements and activities designed to reduce stormwater pollution to the maximum extent practicable and eliminate prohibited non-stormwater discharges through a NPDES municipal stormwater discharge permit. The SQIP is a partner in the larger "Sacramento Stormwater Quality Partnership" that covers the Sacramento county area including the cities of Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova.

The City of Sacramento established the SQIP in 1990 to reduce the pollution carried by stormwater into local creeks and rivers in compliance with the municipal stormwater NPDES permit. The comprehensive plan includes pollution reduction measures for construction sites, industrial sites, illegal discharges and illicit connections, new development, and municipal operations. The SQIP also

includes an extensive public education effort, target pollutant reduction strategy, and monitoring program.

Sacramento Region Stormwater Quality Design Manual

The *Stormwater Quality Design Manual for Sacramento Region* provides locally adapted information for design and selection of multiple categories of stormwater quality control measures: source control, hydromodification control, treatment control, and low-impact development measures (Carmel et al. 2018). The 2018 edition of the manual is based on the *2007 Stormwater Quality Design Manual for the Sacramento and South Placer Regions*, but has been revised to incorporate hydromodification management and low-impact development design standards.

UC Sustainable Practices Policy

There are no policies related to water quality and hydrology. However, relevant procedures pertaining to water quality and stormwater are listed in the *University of California Policy on Sustainable Practices* (University of California 2019).

I Sustainable Water Systems – Water Action Plans: Each Water Action Plan will include a section on Water Usage and Reduction Strategies that describes the applicable types of water comprising water systems, including but not limited to potable water, non-potable water, industrial water, sterilized water, reclaimed water, stormwater, and wastewater. Each Water Action Plan will include a section on Stormwater Management developed in conjunction with the location stormwater regulatory specialist that: a) Addresses stormwater management from a watershed perspective in a location-wide, comprehensive way that recognizes stormwater as a resource and aims to protect and restore the integrity of the local watershed(s); b. References the location's best management practices for preventing stormwater pollution from activities that have the potential to pollute the watershed (e.g., construction; trenching; storage of outdoor equipment, materials, and waste; landscaping maintenance; outdoor cleaning practices; vehicle parking); c. Encourages stormwater quality elements such as appropriate source control, site design (low impact development), and stormwater treatment measures to be considered during the planning stages of projects in order to most efficiently incorporate measures to protect stormwater quality.

Environmental Setting

This section identifies the environmental setting relevant to hydrology and water quality in the 2020 LRDP Update plan area.

Surface and Ground Water Hydrology

The UC Davis Sacramento Campus is in the 27,000-square-mile Sacramento River Basin, approximately 1.5 miles south of the American River and 3 miles east of the Sacramento River. The city of Sacramento, including the Sacramento Campus, uses surface water from the Sacramento and American Rivers and groundwater pumped from the North American and South American subbasins to meet its water demands.

The campus is within the South American groundwater subbasin, within the larger Sacramento Valley Groundwater Basin. The South American groundwater subbasin is considered a high-priority basin. The intensive use of groundwater in the basin has resulted in a general lowering of groundwater elevations near the center of the basin away from the sources of recharge; however, the basin is not in critical overdraft. Existing groundwater wells on the Sacramento Campus are used for irrigation and emergency purposes.

The 146-acre campus consists of approximately 80 percent impervious and 20 percent pervious surfaces. Stormwater flows from the campus are collected in drain inlets, catch basins, and gutters before being discharged into the City of Sacramento's storm drain system. Storm drains convey stormwater runoff from parking lots and building roofs to the public storm drain mains and combined storm-sewer mains. Storm drainpipes on campus range in size from 6 inches to 18 inches in diameter. The utility networks are split into public and private sections. The public sections are operated and maintained by Sacramento public utility agencies and run under the public rights-of-way that cross the campus, connecting to offsite networks along the campus boundary at several locations. The layout of the campus results in a natural division of the site into 10 separate zones. All utilities within each zone, outside of the right-of-way, are maintained by the Sacramento Campus. The majority of the campus is served by a network of combined sewer pipes. These pipes, maintained by the City of Sacramento, convey a combination of stormwater and sanitary sewage from the campus to public wastewater treatment plants. The largest combined sewer main is up to 72 inches in diameter. Within each zone, Sacramento Campus storm and sewer mains are kept separated until the connections to the public combined sewer mains within the public rights-of-way (Affiliated Engineers, Inc. 2019).

Stormwater from the western half of the campus site is held in an underground stormwater detention facility, before it is discharged into the City's combined sewer system. The stormwater detention facility is designed to accommodate runoff from 10-year storm events. The detention system was designed and constructed to handle flows from the development of more than 6 million gross square feet of building space on the campus. Stormwater from the eastern half of the campus is collected in a separate storm drain system that discharges into the American River. During large storm events in which the separate storm drain system cannot handle runoff and to avoid localized flooding, excess stormwater from the eastern half of the campus is held in separate chambers in the stormwater detention facility, and ultimately discharged into the storm drain system at a rate that the system can handle. If flows are very high, the excess stormwater is pumped from the separate stormwater chambers to the City's combined sewer system and treated at the Sacramento Regional Wastewater Treatment Plant (SRWTP; University of California 2010).

Surface Water Quality

Stormwater flows from the western half and excess flows from the eastern half of the campus are detained onsite before they are discharged into the City's combined sewer system or to the American River. The (Lower) American River is 303(d)-listed for impairments of bifenthrin, indicator bacteria, mercury, PCBs (polychlorinated biphenyl), pyrethroids, and toxicity (State Water Resources Control Board 2018). Beneficial uses of the American River include municipal and domestic water supply, agriculture (irrigation only), industrial service supply, power, contact and non-contact recreation, warm and cold freshwater habitat, warm and cold migration, warm and cold spawning, and wildlife habitat (Central Valley Regional Water Quality Control Board 2018).

The combined sewer system is considered at or near capacity and requires all additional inflow to be offset. During smaller storms, the City sends up to 60 million gallons per day (mgd) of wastewater to the SRWTP, which treats stormwater and sanitary sewage prior to discharge into the Sacramento River. When the flows exceed 60 mgd, flows are routed to Pioneer Reservoir, a primary treatment facility adjacent to the Sacramento River. Once the capacity of Pioneer Reservoir is reached, flows are routed to the City's Combined Wastewater Treatment Plant (CWTP), before ultimately being treated and discharged to the Sacramento River. Under extreme high-flow conditions, discharge of untreated combined wastewater from the combined sewer system may

occur (City of Sacramento 2009). Please see Section 3.16, *Utilities and Service Systems*, for more information on the combined sewer and storm drainage facilities that serve the campus.

Generally, groundwater quality within the South American sub-basin meets the primary and secondary drinking water standards for municipal use, including levels of iron, manganese, arsenic, chromium, and nitrates. The groundwater in the subbasin is described as a calcium magnesium bicarbonate with minor fractions of sodium magnesium bicarbonate (California Department of Water Resources 2004).

Flood Hazards

The Sacramento Campus is outside of the 100-year floodplain, within FEMA Zone X (Federal Emergency Management Agency 2012). FEMA Zone X (unshaded) is an area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. The area west of the campus is within FEMA Zone X (shaded), base floodplains areas with reduced flood risk due to levee protection. The campus is approximately 90 miles east of the Pacific Ocean. Therefore, the Sacramento Campus is not subject to inundation by a tsunami. No large waterbodies are near the campus; therefore, the 2020 LRDP Update would not be prone to inundation by a seiche.

3.9.2 Environmental Impacts

This section describes the environmental impacts associated with hydrology and water quality that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of implementation of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

Projects associated with the implementation of the 2020 LRDP Update were analyzed by comparing baseline conditions, as described in Section 3.9.1, *Environmental Setting*, to conditions during construction and operations. Evaluation of potential hydrologic and water quality impacts is based on a review of existing documents and studies that address water resources in the vicinity of the plan area. The analysis focuses on issues related to surface hydrology, groundwater supply, surface and groundwater quality, and flood hazards. The key construction-related impacts were identified and evaluated qualitatively based on the physical characteristics of implementation of the 2020 LRDP Update and the magnitude, intensity, location, and duration of activities.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Violation of any water quality standards or waste discharge requirements or other substantial degradation of surface or groundwater quality.
- Substantial decrease of groundwater supplies or substantial interference with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

- Substantial alteration of 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 that would result in substantial erosion or siltation onsite or offsite.
- Substantial alteration of the existing drainage pattern of the site or area that would increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite.
- Creation of or contribution to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Alteration of the existing drainage pattern in a manner that would impede or redirect flood flows.
- In flood hazard, tsunami, or seiche zones, risk of release of pollutants as a result of project inundation.
- Conflict with or obstruction of implementation of a water quality control plan or sustainable groundwater management plan.

Issues Not Evaluated Further

Previous analysis conducted for the 2010 LRDP Final EIR concluded that development of the 2010 LRDP would not be subject to risk of flooding. Therefore, the 2020 LRDP Update plan area is not subject to flooding or inundation by seiche or tsunami, and there would be no risk of release of pollutants as a result of project inundation. During construction activities, stormwater BMPs would be implemented, as required by federal, state, county, and local policies to minimize degradation of water quality associated with stormwater runoff or construction-related pollutants. In addition, construction activities and operation would comply with local stormwater ordinances, stormwater requirements established by the NEC, University sustainability practices and procedures for stormwater management, and regional waste discharge requirements. Measures to reduce the risk of pollutants in a storm event are discussed under Impact LRDP-WQ-1 and Impact LRDP-WQ-3. Because the proposed 2020 LRDP Update plan area is not subject to flooding due to flood hazard, tsunami, or seiche inundation, there would be no impact. Therefore, the impact of risk of release of pollutants as a result of project inundation is not evaluated further.

Impacts and Mitigation Measures

Impact LRDP-WQ-1: Violation of any water quality standards or waste discharge requirements or other degradation of surface or groundwater quality

Construction and operations resulting from projects associated with the implementation of the 2020 LRDP Update could result in short-term water quality impacts associated with soil erosion and subsequent sediment transport via storm drains. However, implementation of standard erosion control measures and BMPs, as identified in the SWPPP and required by the NPDES Construction General Permit, and compliance with the University of California sustainability practices and procedures for stormwater management would reduce potential adverse water quality impacts. Changes in impervious area under implementation of the 2020 LRDP Update would not substantially change the type or amount of associated pollutants. Therefore, this impact would be **less than significant**.

Construction

Implementation of the 2020 LRDP Update would include construction activities such as grading, stockpiling of spoil materials, and other construction-related earth-disturbing activities could result in short-term water quality impacts associated with soil erosion and subsequent sediment transport to adjacent properties, roadways, or watercourses via storm drains. Sediment transport to local drainage facilities such as drainage inlets, culverts, and storm drains could result in reduced storm flow capacity, resulting in localized ponding or flooding during storm events. Construction activities could also generate dust, settlement, litter, oil, and other pollutants that could temporarily contaminate water runoff from project sites.

Stormwater from construction activities on the eastern half of the campus would discharge directly to the American River. However, stormwater from construction on the western half of the campus would be discharged into the City's combined sewer-storm drain system and would be treated at the SRWTP or the CWTP before discharge into the receiving waters. To reduce the potential for discharge of pollutants into the receiving water from the western half of campus, end-of-line treatment pollutant controls are in place. For construction on the eastern half of the campus, standard methods for erosion and runoff control, including filtration at the site perimeter would be used during construction. Stormwater discharges to the combined sewer system while exempt from the Construction General Permit are expected to comply with Permit provisions but UC Davis does not need to register the project (University of California, Davis Health Systems 2014).

In addition, construction activities would comply with the NPDES Construction General Permit, University of California sustainability practices and procedures for stormwater management, and the NEC, which contain standards to ensure that water quality is not degraded. As part of the NPDES Construction General Permit, standard erosion control measures and BMPs would be identified in a SWPPP and would be implemented during construction to reduce sedimentation of waterways and loss of topsoil. The Sacramento Campus reviews and approves the SWPPPs and submits New Construction Project Information Forms to the Central Valley Regional Water Board. The SWPPP must contain a visual monitoring program and implement a chemical monitoring program for "non-visible" pollutants if there is a failure of BMPs. The SWPPP is required to be submitted before a grading permit is issued. Compliance with NPDES Construction General Permit would require use of BMPs to restrict soil erosion and sedimentation and restrict non-stormwater discharges from the construction site as well as release of hazardous materials. As a performance standard, BMPs to be selected would represent the best available technology that is economically achievable and best conventional pollutant control technology to reduce pollutants.

For all new projects that are over 1 acre in size, UC Davis will determine the construction site risk level. The Risk Level (1, 2, or 3), is determined by a Qualified SWPPP Practitioner/Developer based on the procedure described in the NPDES Construction General Permit and based on project duration, location, proximity to impaired receiving waters, and soil conditions. One of the main criteria for being classified as a greater risk is whether the project will discharge into a stream segment that has been listed under section 303 (d) as being impaired for sediment or whether the stream is listed as having beneficial uses for cold, spawn, and migratory fish habitats. Beneficial uses of the American River include cold migration and cold spawning. Risk Level 1 sites have the least stringent requirements and are subject to the narrative effluent limitations (NELs) specified in the NPDES Construction General Permit, while Risk Level 2 and 3 projects are required to develop and implement a Rain Event Action Plan designed to protect all exposed portions of the site, as well as effluent monitoring and compliance with numeric action levels or numeric effluent limitations to

control for pH and turbidity. Risk Level 3 sites must also implement bioassessment monitoring of receiving waters and receiving water quality monitoring. Because most of the construction projects on the eastern portion of the campus, where discharges are conveyed directly to the American River, are likely to be less than 1 acre, they may not be subject the construction general plan and associated monitoring requirements. Projects that are determined to be Risk Level 2 or 3, will be required to comply with Numeric Action Limits or NELs¹ to control for pH and turbidity in the American River.

Other potential water quality impacts include chemical spills into storm drains or groundwater aquifers if proper minimization measures are not implemented. However, the campus requires implementation of project-specific measures during construction to minimize impacts to surface water quality. These measures include the use of hay bales, straw wattles, or silt fences to protect catch basins and drain inlets. Required BMPs would be implemented to reduce pollutants in stormwater and other nonpoint-source runoff. Measures range from source control to treatment of polluted runoff. BMPs can include watering active construction areas to control dust generation during earthmoving activities; using water sweepers to sweep streets and haul routes; and installing erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, and sandbag dykes) to prevent silt runoff to public roadways, storm drains, or waterways. As appropriate, disturbed soil would be revegetated as soon as possible with the appropriate selection and schedule of plants.

No disturbed surfaces would be left without erosion control measures in place during the rainy season, which generally occurs between October 15 and April 15. In addition to compliance with the NPDES Construction General Permit, campus construction would also be required to comply with local stormwater and construction site runoff ordinances. These requirements involve development and implementation of an Erosion and Sedimentation Control Plan specific to the construction site to minimize water quality impacts. No surface water features are within the plan area; therefore, construction would not involve dredge and fill activities.

Compliance with the Construction General Permit and associated requirements would ensure that construction activities do not result in a violation of water quality standards or waste discharges requirements, or otherwise result in water quality degradation. Potential impacts on water quality from construction activities on campus would be **less than significant**.

In the event that dewatering for an individual site is required, the SWPPP would include a dewatering plan, which would establish measures to prevent/minimize sediment and contaminant releases into groundwater during excavation. Projects associated with the implementation of the 2020 LRDP Update would comply with Central Valley Regional Water Board dewatering requirements to prevent potential water quality impacts on surface waters or ensure proper treatment measures are implemented prior to discharge. Although small amounts of construction-related dewatering are covered under the NPDES Construction General Permit, the Central Valley Regional Water Board also has regulations related to dewatering activities (Order R5-2016-0076/NPDES Permit No. CAG995002; amended by Order R5-2018-0002). In the event of dewatering during construction activities or before dewatering to surface water via a storm drain, the

¹ NELs is a method of achieving federal water quality requirements and compliance with state water quality standards. Federal law authorizes both narrative and numeric effluent limitations to meet state water quality standards. The Construction General Permit has developed specific BMPs and NALs in order to achieve these minimum federal standards.

contractor would obtain coverage under the NPDES Construction General Permit from the Central Valley Regional Water Board. Coverage under the NPDES Construction General Permit typically includes dewatering activities as authorized non-stormwater discharges, provided that dischargers prove the quality of water to be adequate and not likely to affect beneficial uses. All requirements of dewatering would be met to ensure that water quality is not affected. This impact would be **less than significant**.

Based on the analysis above, it is not anticipated that construction associated with implementation of the 2020 LRDP Update would result in the violation of any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. Construction-related water quality impacts associated with implementation of the 2020 LRDP Update would be **less than significant**.

The 2010 LRDP Final EIR found that construction-related water quality impacts generated by the implementation of the 2010 LRDP would not violate any water quality standards or waste discharge requirements or other degradation of surface or groundwater quality and would be less than significant. Therefore, implementation of the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Operation

Pollutants accumulate on impervious areas and are mobilized during precipitation events. “First flush” storm events, during which concentrated pollutants have accumulated, have the largest impact on water quality in receiving waters. However, adverse impacts to water quality are temporary, and are limited to wet weather runoff.

Implementation of the 2020 LRDP Update would increase impervious surface and activities that are associated with potential water pollutants on the campus. However, campus operations would comply with the University sustainability practices and procedures for stormwater management and the NEC, as required. The sustainability procedures include water action plans to address stormwater management and BMPs, and encourage stormwater quality elements such as source control, site design (low impact development), and stormwater treatment measures to control the discharge of pollutants into stormwater. Recommended structural BMPs include a sand-oil separator for pre-treatment of stormwater runoff from the proposed parking structures. In addition, the Sacramento Campus would implement stringent post-construction water quality requirements that control for pH and turbidity, as required by the NPDES Construction General Permit. Implementation of the 2020 LRDP Update would replace surface parking lots with parking structures that reduce the discharge of runoff containing metals and petroleum hydrocarbons. The Sacramento Campus uses only EPA-registered landscape maintenance products and products with the lowest toxicity (University of California 2010). This practice would continue under the 2020 LRDP Update.

With compliance with the NPDES Construction General Permit, NEC, and University sustainability practices and procedures, impacts on surface water quality from implementation of the 2020 LRDP would be **less than significant**. In addition, it is anticipated that urban contaminants would not significantly infiltrate and affect groundwater quality. Soils underlying the campus have a slow rate of permeability (University of California 2010). Because runoff percolates slowly through the soils, any potential contaminants would be filtered, thereby minimizing adverse effects to groundwater quality.

Development associated with the 2020 LRDP Update would result in an increase in impervious area. Increased impervious areas result in increased runoff rates and volumes, and associated pollutants. Impervious areas also reduce infiltration of stormwater for groundwater recharge and prevent pollutant filtration of stormwater that would otherwise occur in pervious areas. Increased storm runoff would also increase the potential for erosion and sedimentation. Increased areas of impervious surfaces, as well as increased human activity such as automobile and pesticide use, can also result in increased pollutant loading to surface waters as well as degraded groundwater quality.

Estimates of the existing and future areas of impervious surface on the Sacramento Campus are provided in the *UC Davis Sacramento Campus Utilities Master Plan*. Currently, approximately 80 percent of the campus land area is impervious and 20 percent is pervious under future conditions. This represents an increase in impermeability. However, implementation of sustainable site design features such as surface landscaping design, green roofs, permeable pavements, and stormwater treatment devices would reduce stormwater runoff flows and associated pollutants and treat stormwater runoff.

As discussed under Section 3.9.1 *Existing Conditions*, prior to discharge into the City's combined sewer system, stormwater from the western half of the campus site is held in an underground stormwater detention facility; stormwater from the eastern half of the campus is collected in a separate storm drain system that discharges into the American River. Excess stormwater from the eastern half of the campus is held in separate chambers in the stormwater detention facility, and ultimately discharged into the storm drain system.

Considering the small increase in stormwater runoff and because all excess flows would be detained in the onsite detention basin before discharge, development associated with implementation of the 2020 LRDP Update would not substantially change the quantity of stormwater that would discharge from the plan area. Therefore, there would be no substantial change in the type or amount of associated pollutants or result in an increase in erosion into the receiving waters. In addition, the NPDES Construction General Permit emphasizes runoff reduction through onsite stormwater reuse, interception, evapotranspiration and infiltration through non-structural controls and conservation design measures (e.g., downspout disconnection, soil quality preservation/enhancement, interceptor trees). The project would be designed and maintained in accordance with City, County, and State Water Board water quality requirements, such as the NEC and University sustainability practices and procedures.

Based on the above analysis, the 2020 LRDP Update would not violate any water quality standards or degrade water quality. The impact would be **less than significant**. The 2010 LRDP Final EIR concluded that impact on water quality would be less than significant and, therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-WQ-2: Substantial decrease of groundwater supplies or substantial interference with groundwater recharge such that the project may impede sustainable groundwater management of the basin

Implementation of the 2020 LRDP Update would result in increased impervious surface areas. However, the campus is predominantly developed and changes in impervious surface area would not cause substantial change or interference with groundwater recharge or increase groundwater demands. Implementation of landscaping would allow for infiltration and groundwater recharge. Therefore, this impact would be **less than significant**.

Groundwater is planned as a source of landscaping water for the Sacramento Campus. Groundwater wells on the Sacramento Campus are used for irrigation and emergency purposes. Approximately 35.1 acres of landscaped areas are currently irrigated using both groundwater and potable water supplied by the City. Of this total, approximately 22.8 acres are irrigated using groundwater. In addition, two emergency water pumps serve emergency domestic water feeds to the hospital. The emergency domestic water pipes are separate from the standard domestic water loop around the hospital, and no direct connections between these networks are made within the site (University of California 2010). Groundwater use during operation would be similar to existing conditions. The addition of surface landscaping would utilize water efficient landscaping. Therefore, campus operations would not increase demands for groundwater under the 2020 LRDP Update. Therefore, there would be no impact on the groundwater supplies. The campus is predominantly developed. Changes in impervious surface area would not substantially change or interfere with groundwater recharge. Implementation of bioswales, permeable pavements, and landscaping that promotes infiltration, would allow for infiltration and promote groundwater recharge.

The 2010 LRDP Final EIR found that the Sacramento Campus would not increase demands for groundwater, and there would be no impact on the local aquifer. Based on the above analysis, the 2020 LRDP Update would not substantially decrease groundwater supplies or interference with groundwater recharge such that the project may impede sustainable groundwater management of the basin. The impact would be **less than significant**. The 2010 LRDP Final EIR concluded that impact on groundwater supply would be less than significant and, therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-WQ-3: Substantial alteration of existing drainage patterns in a manner that would result in substantial erosion or siltation onsite or offsite; substantial increase in the amount of surface runoff in a manner that would result in flooding onsite or offsite; creation of or contribution to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; alteration of the existing drainage pattern in a manner that would impede or redirect flood flows

Implementation of the 2020 LRDP Update would result in increased impervious surface areas, and consequently increased stormwater flows. However, stormwater runoff associated with impervious surfaces would be reduced with sustainable site design features incorporated into projects associated with implementation of the 2020 LRDP. Changes in impervious area would not substantially change the quantity of stormwater discharge; therefore, no flooding or additional sources of polluted runoff would result. Construction activities may, however, expose soils that contain an excessive amount of water. As a result, damage to buildings or landscaping may result. Mitigation Measure LRDP-WQ-1 would require implementation of a subsoil drainage system to avoid potential damage. Implementation of Mitigation Measure LRDP-WQ-1 would reduce the severity of this impact. Therefore, this impact would be **less than significant with mitigation**.

Construction

During construction, stormwater drainage patterns could be temporarily altered. However, the project would implement BMPs, required in the SWPPP, to minimize the potential for erosion or siltation in nearby storm drains and temporary changes in drainage patterns during construction. Construction BMPs would capture and infiltrate small amounts of sheet-flow into the ground such that offsite runoff from the construction site would not increase, ensuring that drainage patterns are not significantly altered. Measures required by the NPDES Construction General Permit would also limit site runoff during construction and would not alter stormwater drainage patterns. BMPs would be implemented to control construction site runoff, ensure proper stormwater control and treatment, and reduce the discharge of pollution to the storm drain system. Therefore, construction would not substantially alter the existing drainage pattern of the area in a manner that would result in substantial erosion or siltation or increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite. In addition, the Water Action Plan would provide practices to prevent stormwater pollution during construction activities, as required by University sustainability practices and procedures for stormwater management. However, Construction activities may expose soils which contain an excess amount of water. As a result, damage to buildings or landscaping may result. Mitigation Measure LRDP-WQ-1 would require implementation of a subsoil drainage system to avoid potential damage, based on site specific soil conditions.

Therefore, with the implementation of Mitigation Measure LRDP-WQ-1, 2020 LRDP Update construction would not result in an exceedance of drainage system capacities, and the associated impact would be **less than significant with mitigation**.

Mitigation Measure LRDP-WQ-1: Implement a Subsoil Drainage System to Avoid Damage to Buildings

In the event a sub-soil drainage system is required (as determined by a geotechnical analysis), the system will be installed underground to remove excessive water from the soil, and avoid damage to buildings or landscaping. Groundwater from exterior building footings will be

conveyed to a sump pump. The effluent will be pumped into the building storm drainage system. Subsoil drainage systems that cannot discharge to the storm sewer by gravity flow will be drained by gravity to sump pumps and will be pumped into the building storm drainage system. Each sump pump will be sized for 100 percent of the estimated design flow. Sump pumps will be connected to the emergency (standby) power system to permit operation during a loss of normal power. Design criteria for the subsoil drainage system will be defined by the geotechnical report.

Operation

The campus is predominantly developed with limited areas of landscaped and impervious surfaces. Impervious surface areas under future campus conditions are assumed to increase slightly from existing conditions. The amount of impervious surface cover is related to stormwater runoff. Larger areas of impervious surface are associated with larger volumes and flows of stormwater runoff. Therefore, stormwater flows would increase with future development from most campus zones. The anticipated increase in impervious surface area would potentially increase future (2025) stormwater peak flows by approximately 4 percent and 5 percent, for the 10-year and 100-year storm, respectively. However, incorporating sustainable site design features into future campus conditions, would reduce stormwater runoff associated with impervious surfaces. Sustainable site design features such as surface landscaping design, green roofs, permeable pavements, and stormwater treatment devices would increase permeability and reduce stormwater runoff flows and associated pollutants. Excess stormwater would continue to be detained onsite before it is released to the receiving water body, reducing peak flows that could result in downstream flooding. In addition, the NPDES Construction General Permit requires dischargers to maintain pre-development drainage rates. A Water Action Plan would provide practices to prevent stormwater pollution during operation, as required by University of California sustainability practices and procedures for stormwater management. Practices would consider proper storage of materials and waste, landscaping maintenance, and vehicle parking. The Water Action Plan encourages stormwater quality features such as appropriate source control, site design including low impact development, and stormwater treatment measures to be considered during the planning stages of projects to protect stormwater quality and manage stormwater flows. Calculated stormwater runoff flow would be determined when the conceptual landscaping plan is prepared. If stormwater runoff reduction measures are applied to designs of future projects associated with implementation of the LRDP, pipe sizes for future stormwater infrastructure may be reduced. The existing storm sewer system has the capacity to serve future planned improvements. Storm sewer infrastructure would be relocated around future building footprints and new stormwater infrastructure would provide services to each future building as the buildings are constructed (Affiliated Engineers, Inc. 2019).

The combined sewers are not located near planned buildings; however, easements would be evaluated in the initial architectural design of new structures. Engineers would carefully consider building footprints in relation to the combined sewer mains because the cost of relocating them would be high. The campus contains a combined storm-sewer overflow system that consists of a combined sewer main under Y Street, which ultimately flows to a concrete storage tank. To maintain the current operation of the combined sewer overflow system, future connections or demand flows would be directed to the Y-Street section of the combined sewer. Under future development, no direct connection would be made to the combined sewer section that flows toward the storage tanks.

Within the Cancer Center, 12-inch storm drains would collect stormwater between each of the new buildings in this zone, and connect to an existing public combined sewer lateral at V Street. A short 18-inch storm drain relocation would occur around a Group 2 Leased Facility. New storm drain infrastructure is proposed for the Aggie Square District development. Pipes 12 inches to 18 inches in diameter would convey stormwater to an existing 18-inch storm drain at the southern section of this zone. The new MIND Dry Lab would demolish existing storm drain piping within its footprint, however existing piping would convey stormwater around the modified site. No expansions of the Central Energy Plant, Stockton Boulevard Facilities, and the Broadway Building are planned under the 2020 LRDP Update, therefore future storm drain piping is not planned for these zones. Drainage patterns would be similar to existing conditions and would not result in flooding, create runoff that would exceed stormwater drainage capacity, or provide additional sources or polluted runoff (Affiliated Engineers, Inc. 2019).

The 2010 LRDP Final EIR found that new development on the campus would not result in additional stormwater runoff that would result in flooding. Based on the above analysis, the 2020 LRDP Update would not substantially alter existing drainage patterns or result in adverse impacts related to drainage capacity and associated impacts. The impact would be **less than significant**. The 2010 LRDP Final EIR concluded that impact on drainage patterns would be less than significant and, therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-WQ-4: Conflict with or obstruction of implementation of a water quality control plan or sustainable groundwater management plan

Construction BMPs and sustainable site design features would ensure that water quality standards would be achieved, including the water quality objectives that protect designated beneficial uses of surface and groundwater, as defined in the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin. Groundwater use would be similar to existing conditions, and would not conflict with or obstruct implementation of the Central Sacramento County Groundwater Management Plan. Therefore, there would be **no impact**.

Commonly practiced BMPs would be implemented to control construction site runoff and to reduce the discharge of pollutants to storm drain systems from stormwater and other nonpoint-source runoff. As part of complying with permit requirements during ground disturbing or construction activities, implementation of water quality control measures and BMPs would ensure that water quality standards would be achieved, including the water quality objectives that protect designated beneficial uses of surface water and groundwater, as defined in the basin plan. Construction runoff would also have to comply with the appropriate water quality objectives for the region. The NPDES Construction General Permit also requires stormwater discharges not to contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or water quality standards, including designated beneficial uses. Incorporation of sustainable site design features such as surface landscaping design, green roofs, permeable pavements, and stormwater treatment devices would also reduce stormwater runoff flows and associated pollutants. In addition, implementing the appropriate general plan policies would require the protection of groundwater

recharge areas and groundwater resources, as required by a sustainable groundwater management plan.

The impact of conflicting with or obstructing implementation of a water quality control plan or sustainable groundwater management plan is a new (2019) CEQA Guidelines Appendix G Checklist item. However, projects implementing the 2010 LRDP would have been required to comply with water quality requirements and would, therefore, not conflict with a water quality control plan. Further, the 2010 LRDP Final EIR found that the project would not result in adverse impacts on the local groundwater aquifer. Under the 2020 LRDP Update, implementation of stormwater control BMPs during construction, as required by the NPDES Construction General Permit, would reduce the discharge of pollutants and adverse impacts to water quality. Incorporation of sustainable site design features would also reduce stormwater runoff flows and associated pollutants. During operation, groundwater use would be similar to existing conditions. Campus operations would not increase demands for groundwater under the 2020 LRDP Update. Surface landscaping would utilize water efficient landscaping, and existing groundwater wells on the Sacramento Campus are used for irrigation and emergency purposes only.

Based on the above analysis, the 2020 LRDP Update would not conflict with or obstruct implementation of the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin or the Central Sacramento County Groundwater Management Plan. There would be **no impact**.

This impact was not considered under CEQA at the time the 2010 LRDP EIR was prepared. However, based on the analysis of other impacts, the 2010 LRDP would comply with water quality control and sustainable groundwater management plans. Therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

3.10 Land Use and Planning

This section describes the regulatory and environmental setting for land use and planning in the plan area, analyzes effects on land use and planning that would result from implementation of the 2020 LRDP Update, and provides mitigation measures to reduce the effects of any significant impacts, if applicable.

3.10.1 Existing Conditions

Regulatory Setting

This section summarizes key University, regional and local regulations, laws, and policies relevant to land use and planning in the plan area. There are no federal or state plans, policies, regulations, or laws related to land use and planning that would affect the 2020 LRDP Update.

University of California

As noted in the *University of California Autonomy* section of this chapter, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the Sacramento Campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts.

University of California Davis Sacramento Campus 2010 Long Range Development Plan (Existing)

The existing Sacramento Campus 2010 LRDP was approved in 2010; the 2020 LRDP Update would update and replace this existing plan (University of California 2010). The 2010 LRDP included the following principle that applies to land use and planning as listed below.

- **Principle #1: Ensure Appropriate Facilities Adjacencies.** Facility adjacencies help create efficiencies in operations and in the movement of patients, visitors, students, faculty, and staff. Recognizing existing major building investments, new facilities will be located in reasonable proximity to the current primary UCDHS mission-related uses.

Federal

There are no federal plans or policies addressing land use and planning that pertain to the 2020 LRDP Update.

State

There are no state plans or policies addressing land use and planning that pertain to the 2020 LRDP Update.

Regional and Local

City of Sacramento General Plan

For areas surrounding the UC Davis Sacramento Campus, the *Sacramento 2030 General Plan* set a new direction for the future of Sacramento based on the City's Smart Growth Principles (City of Sacramento 2009). The *Sacramento 2035 General Plan* included technical policy updates, technical review, and updated and reset the planning horizon for the general plan from 2030 to 2035 (City of Sacramento 2015).

By 2035, Sacramento is expected to have roughly 261,000 housing units, 387,000 employees, and up to 640,400 residents. The *Sacramento 2035 General Plan* also promotes Smart Growth principles as a way to accommodate the projected population increase while improving quality of life in the city. The *Sacramento 2035 General Plan* was adopted by the City Council on March 3, 2015. Six themes underlie and support the Smart Growth vision as outlined below.

- Making great places
- Growing smarter
- Maintaining a vibrant economy
- Creating a healthy city
- Living lightly—reducing our carbon footprint
- Developing a sustainable future

The City's *2040 General Plan Update* is currently in process and is anticipated to be adopted in February 2021.

The current *Sacramento 2035 General Plan* emphasizes compact growth, infill development and reuse of underutilized properties, intensifying development near transit and mixed-use activity centers, and locating jobs closer to housing. It also endorses land use patterns and densities that foster pedestrian and bicycle use and recreation and takes steps to reduce carbon emissions that contribute to climate change.

For the lands immediately adjacent to the Sacramento Campus, the current *2035 General Plan* utilizes the land use designations of Traditional Neighborhood Low Density for the areas north, south, and east of the campus; Traditional Neighborhood High Density for a portion of the area east of the campus just north of Broadway; and Urban Center Low for the land immediately west of the campus and across from Stockton Boulevard. To the west of the Urban Center Low land use is another residential neighborhood designated Traditional Neighborhood Low Density. For each of these land use designations, the current *Sacramento 2035 General Plan* identifies allowable density, floor area ratio, allowed uses, and certain urban form guidelines. The detailed mapping for these designations is contained in the current *Sacramento 2035 General Plan's* Land Use and Urban Form Diagram, and in the associated planning guidelines (City of Sacramento 2015:2-131 and following).

Environmental Setting

This section identifies all pertinent changes to the environmental setting relevant to land use and planning in the 2020 LRDP Update plan area since publication of the 2010 LRDP Final EIR.

Sections 4.9.2.1 through 4.9.2.5 in the *Environmental Setting* section of the 2010 LRDP Final EIR discuss existing and adjacent land uses to the Sacramento Campus, planned and proposed land use changes in the Sacramento Campus' vicinity, and applicable local plans and policies.

Plan Area

The project site is the UC Davis Sacramento Campus located in Sacramento, approximately 2.5 miles southeast of downtown Sacramento, 17 miles east of the UC Davis main campus in Davis, and 90 miles northeast of San Francisco (Figure 2-2). The UC Davis Sacramento Campus is bounded by V Street on the north, Stockton Boulevard on the west, Broadway on the south, and a residential neighborhood to the east.

The LRDP boundary has expanded to include the Rehabilitation Hospital site at the northwest corner of Broadway and 49th Street. The University also owns some properties surrounding the project site, including buildings along Stockton Boulevard and on Broadway. The University also leases offsite facilities in Sacramento for clinics and offices totaling over 500,000 square feet. Leased spaces and other off-campus buildings west of Stockton Boulevard and south of Broadway, except the Broadway Office Building, are not part of the 2020 LRDP Update plan area and are outside the scope of this Supplemental EIR.

Existing Land Uses on the UC Davis Sacramento Campus

Existing land uses on the Sacramento Campus have been developed over time, and most recently through implementation of the 2010 LRDP, which would be replaced with the 2020 LRDP Update. The development and land uses on the Sacramento Campus currently are intended to support the University's continued mission to provide a world-class medical institution at the Sacramento Campus. Section 2.4.3, *Land Use Designations*, describes each 2020 LRDP Update land use designation. Figure 2-6 shows the distribution of existing land use designations across the Sacramento Campus, and Figure 2-7 shows the proposed land use designations associated with the 2020 LRDP Update.

Surrounding Land Uses

The land uses surrounding the Sacramento Campus include urban corridor, low-density suburban neighborhoods and a high-density traditional neighborhood. Stockton Boulevard, along the western boundary of the campus, is lined mostly with one- to three-story office buildings and a small amount of retail. A Shriners Hospital is located on Stockton Boulevard just south of X Street across from the UC Davis Health System Main Hospital.

The Elmhurst neighborhood to the north and east of the campus is a residential neighborhood consisting primarily of single-family homes. To the west (i.e., west of commercial business buildings along Stockton Boulevard) is the North Oak Park neighborhood, with a mix of single-family and multi-family residences. These neighborhoods can be characterized as pre-World War II traditional neighborhoods. Single and multi-family residential are the predominant land use in the Fairgrounds neighborhood to the southwest of the campus.

Several public institutions and offices are located between the southern edge of the campus and Broadway. The Language Academy of Sacramento (formerly Marian Anderson Elementary School), State Department of Justice and its Law Enforcement Division, and the State Employment Development Department offices are located along 49th and 50th Streets and north of Broadway.

The Department of Motor Vehicles, Sacramento County Coroner, including the Sacramento County District Attorney Crime Lab, and other public uses are located south of Broadway and west of the Broadway Office Building. The Broadway Office Building, which is owned by the UC Davis Health System, houses administrative offices and is part of the 2010 LRDP and 2020 LRDP Update plan areas.

3.10.2 Environmental Impacts

This section describes the environmental impacts associated with land use and planning that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

This analysis focuses on the compatibility of the proposed 2020 LRDP Update with existing and planned land uses within and near the plan area. The surrounding land uses under consideration are typically within one city block of the plan area, although there is no established limit or radius related to land use compatibility. Potentially significant land use conflicts are those that could cause a significant environmental impact due to a conflict with the implementation of any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Accordingly, the following assessment focuses on potential conflicts that could occur in direct proximity (i.e., within one city block of the campus site boundaries) but also considers potential conflicts beyond that distance for certain potential land use compatibility issues.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant land use and planning effect if it would result in any of the conditions listed below.

- Physically divide an established community.
- 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.

Issues Not Evaluated Further

Previous analysis conducted for the 2010 LRDP concluded that development of the 2010 LRDP would not physically divide an established community. Because all the activities that would occur under the 2020 LRDP Update are within the UC Davis Sacramento Campus boundary, the project would not physically divide a community as noted in the 2010 LRDP Initial Study and Final EIR. No aspect of the 2020 LRDP Update would physically divide the community; therefore, this issue is not discussed further.

Impacts and Mitigation Measures

Impact LRDP-LU-1: 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

The 2020 LRDP Update would not conflict with any applicable land use plan. Because the University holds jurisdiction over campus-related projects, projects carried out by UC Davis would be consistent with the 2020 LRDP Update. The impact would be **less than significant**.

The 2020 LRDP Update, if adopted, would become the campus land use plan. Pursuant to the University of California's constitutional autonomy, UC Davis is the only agency with land use jurisdiction over Sacramento Campus projects in furtherance of the University's educational mission. The LRDP boundary is expanding with the 2020 LRDP Update but the expansion incorporates campus owned property and is not subject to municipal planning efforts. The 4-acre rehabilitation hospital site, which was acquired in 2012, would receive the *Hospital* land use designation under the 2020 LRDP Update.

Under the 2020 LRDP Update, existing campus land use designations would be modified to support projected campus population growth and enable expanded and new program initiatives as shown in the goals and objectives of the 2020 LRDP Update in Section 2.3, *Project Description: 2020 LRDP Update*, and the existing and proposed land use designations in Table 2-4. The land use changes identified in the 2020 LRDP Update and the potential development that may occur as a result of these changes represent an intensification of existing University-related uses on the Sacramento Campus (e.g., the addition of housing and increased building heights). Additionally, the 2010 LRDP did not include on-campus housing as a land use activity, and the proposed 2020 LRDP Update would include housing.

Projected campus population growth that may occur under the 2020 LRDP Update would be accommodated through the development of additional structures on the Sacramento Campus including housing and state-of-the-art facilities for science, technology, engineering, and research, as well as office space and education, thereby increasing the potential for land use conflicts with the surrounding area. However, as shown in Figures 2-6 and 2-7, the proposed land use changes are slightly revised under the 2020 LRDP Update, primarily to add housing as a new land use on campus and to expand hospital uses.

The 2020 LRDP Update includes new height restrictions. Height restrictions were based on land use designation in the 2010 LRDP, but the 2020 LRDP Update proposes a campus-wide standard of 200 feet, with landscape buffers and setbacks, and lower height limits in specific areas to conform to the surrounding neighborhoods. Height restrictions are described in detail in Chapter 2, *Project Description: 2020 LRDP Update*, and analyzed in Section 3.1, *Aesthetics*.

The addition of housing in the 2020 LRDP Update would not conflict with any goals or objectives of the 2010 LRDP or the planning principles identified in Chapter 2. Additionally, expansion of housing uses would remain consistent with the current types of land uses on campus and immediately adjacent to campus, and would remain consistent with the types of land use originally anticipated in the 2010 LRDP. Therefore, development under the 2020 LRDP Update is not anticipated to result in land use conflicts.

As shown in Figures 2-6 and 2-7, land use categories are slightly revised under the 2020 LRDP Update, but these changes would be consistent with surrounding land uses, and would not conflict with them.

The *Sacramento 2035 General Plan* governs all land uses surrounding the Sacramento Campus. As described above, the *Sacramento 2035 General Plan* emphasizes compact growth, infill development and reuse of underutilized properties, intensifying development near transit and mixed-use activity centers, and locating jobs closer to housing. The plan endorses land use patterns and densities that foster pedestrian and bicycle use and recreation, and takes steps to reduce carbon emissions that contribute to climate change. The 2020 LRDP Update is consistent with the *Sacramento 2035 General Plan* as it would provide for compact growth, development near transit and mixed-use activity centers, jobs closer to housing, would foster pedestrian and bicycle use, and requires U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Silver/Gold certification. Therefore, while the Sacramento Campus is not subject to municipal zoning provisions, implementation of the 2020 LRDP Update would not conflict with existing plans and policies for the purposes of reducing or mitigating environmental impacts, nor would it result in land use conflicts. The impact would be **less than significant**.

The 2010 LRDP Final EIR concluded that this impact was less than significant with mitigation and the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

3.11 Noise

This section describes the regulatory and environmental setting for noise in the plan area, analyzes the effects of noise sources that would result from implementation of the 2020 LRDP Update, and provides mitigation measures to reduce the effects of any significant impacts, if applicable.

3.11.1 Fundamentals of Environmental Noise and Vibration

Overview of Noise and Sound

Noise is commonly defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, an evaluation of noise is necessary when considering the environmental impacts of a proposed project.

Sound is mechanical energy (vibration) transmitted by pressure waves over a medium such as air or water. Sound is characterized by various parameters, including the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor for characterizing the loudness of an ambient (existing) sound level. Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called *A-weighting*, written as *dBA* and referred to as *A-weighted decibels*. Table 3.11-1 defines sound measurements and other terminology used in this chapter, and Table 3.11-2 summarizes typical A-weighted sound levels for different noise sources.

In general, human sound perception is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, a change of 3 dB is barely noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level as it increases or decreases, respectively.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (such as L_{10} , L_{20}), the day-night sound level (L_{dn}), and the community noise equivalent level (CNEL). L_{dn} and CNEL values differ by less than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent and are treated as such. These measurements are defined in Table 3.11-1.

Table 3.11-1. Definition of Sound Measurements

Sound Measurements	Definition
Decibel (dB)	A unitless measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude with respect to a reference sound pressure amplitude. The reference pressure is 20 micropascals.
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
C-Weighted Decibel (dBC)	The sound pressure level in decibels as measured using the C-weighting filter network. The C-weighting is very close to an unweighted or <i>flat</i> response. C-weighting is used only in special cases (i.e., when low-frequency noise is of particular importance). A comparison of the measured A- and C-weighted level gives an indication of low-frequency content.
Maximum Sound Level (L_{max})	The maximum sound level measured during the measurement period.
Minimum Sound Level (L_{min})	The minimum sound level measured during the measurement period.
Equivalent Sound Level (L_{eq})	The equivalent steady-state sound level that in a stated period of time would contain the same acoustical energy.
Percentile-Exceeded Sound Level (L_{xx})	The sound level exceeded X% of a specific time period. L_{10} is the sound level exceeded 10% of the time, and L_{90} is the sound level exceeded 90% of the time. L_{90} is often considered to be representative of the background noise level in a given area.
Day-Night Level (L_{dn})	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Vibration Velocity Level (or Vibration Decibel Level, VdB)	The root-mean-square velocity amplitude for measured ground motion expressed in dB.
Peak Particle Velocity (Peak Velocity or PPV)	A measurement of ground vibration, defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. PPV is usually expressed in inches per second (in/sec).
Frequency: Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure.

Table 3.11-2. Typical A-weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock band
Jet flyover at 1,000 feet		
	—100—	
Gas lawnmower at 3 feet		
	—90—	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	—80—	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower at 100 feet	—70—	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	—60—	
		Large business office
Quiet urban daytime	—50—	Dishwasher in next room
Quiet urban nighttime	—40—	Theater, large conference room (background)
Quiet suburban nighttime		
	—30—	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	—20—	
		Broadcast/recording studio
	—10—	
	—0—	

Source: California Department of Transportation 2013a.

dBA = A-weighted decibels; mph = miles per hour.

For a point source, such as a stationary compressor or a piece of construction equipment, sound attenuates (lessens in intensity), based on geometry, at a rate of 6 dB per doubling of distance. For a line source, such as free-flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance perpendicular to the source (California Department of Transportation 2013a).

Atmospheric conditions, including wind, temperature gradients, and humidity, can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface such as grass attenuates at a greater rate than sound that travels over a hard surface such as pavement. The increased attenuation is typically in the range of 1 to 2 dB per doubling of distance. Barriers such as buildings or topographic features that block the line of sight between a source and receiver also increase the attenuation of sound over distance.

Community noise environments are generally perceived as *quiet* when the 24-hour average noise level is below 45 dBA, *moderate* in the 45 to 60 dBA CNEL range, and *loud* above 60 dBA CNEL. Very noisy urban residential areas are usually around 70 dBA CNEL. Along major thoroughfares, roadside noise levels are typically between 65 and 75 dBA CNEL. Incremental changes of 3 to 5 dB in the existing 1-hour L_{eq} , or the CNEL, are commonly used as thresholds for an adverse community

reaction to a noise increase. However, there is evidence that incremental thresholds in this range may not be sufficiently protective in areas where noise-sensitive uses are located and CNEL is already high (i.e., above 60 dBA). In these areas, limiting noise increases to 3 dB or less is recommended (Federal Transit Administration 2018). Noise intrusions that cause short-term interior noise levels to rise above 45 dBA at night can disrupt sleep. Exposure to noise levels greater than 85 dBA for 8 hours or longer can cause permanent hearing damage.

Overview of Groundborne Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Construction-related vibration primarily results from the use of impact equipment such as pile drivers (both impact and vibratory), hoe rams, vibratory compactors, and jack hammers, although heavily loaded vehicles may also result in substantial groundborne vibration. Operations-related vibration results primarily from the passing of trains, buses, and heavy trucks. Vibration is measured by PPV, defined as the maximum instantaneous peak of the vibration signal in inches per second. PPV is the metric typically used to describe vibration from sources that may result in structural stresses in buildings (Federal Transit Administration 2018). Groundborne vibration can also be quantified by the root-mean-square velocity amplitude, which is useful for assessing human annoyance. The root-mean-square amplitude is expressed in terms of VdB, a metric that is sometimes used in evaluating human annoyance resulting from groundborne vibration.

The operation of heavy construction equipment, particularly pile-drivers and other heavy-duty impact devices (such as pavement breakers), creates seismic waves that radiate along the surface of the ground and downward. These surface waves can be felt as ground vibration and result in effects that range from annoyance for people to damage to structures. Groundborne vibration generally attenuates rapidly with distance from the source of the vibration. This attenuation is a complex function of how energy is imparted into the ground as well as the subsurface soil and/or rock conditions through which the vibration is traveling. Variations in geology can result in different vibration levels, with denser soils generally resulting in more rapid attenuation over a given distance. The effects of ground-borne vibration on buildings include movement of building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. Groundborne noise is the rumbling sound generated by the vibration of building surfaces such as floors, walls, and ceilings that radiate noise from the motion of the room surfaces. Groundborne noise can also occur because of the low-frequency components from a specific source of vibration, such as a rail line.

Vibration traveling through typical soil conditions may be estimated at a given distance by the following formula, where PPV_{ref} is the reference PPV at 25 feet (Federal Transit Administration 2018):

$$PPV = PPV_{ref} \times (25/\text{distance})^{1.5}$$

The background vibration velocity level in residential areas is usually 50 VdB or lower. The vibration velocity level of perception for humans is approximately 65 VdB, and human response to vibration is not usually substantial unless the vibration exceeds 70 VdB. Most perceptible indoor vibration is caused by sources within buildings, such as the operation of mechanical equipment, the movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are heavy construction equipment, steel-wheeled trains, and vehicular traffic on rough

roads. Groundborne noise and vibration are the most significant problems for tunnels that are under residential areas or other noise-sensitive structures.

3.11.2 Existing Conditions

Regulatory Setting

This section identifies key University of California, federal, state, and regional and local regulations, laws, and policies relevant to noise and vibration in the plan area.

University of California

There are no University of California regulations specifically related to noise that apply to the 2020 LRDP Update.

Federal

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated federal agencies where relevant.

Federal Aviation Administration

The Federal Aviation Administration establishes 65 dBA CNEL as the maximum noise exposure limit associated with aircraft noise measured at exterior locations in noise-sensitive land uses (e.g., land uses where quiet environments are essential such as residential areas, churches, and hotels).

Federal Transit Administration Vibration Impact Criteria

Federal Transit Administration (FTA) provides guidance on evaluating effects of vibration levels on humans from various vibration-inducing events, including construction activities and vibration from railroads. The impact criteria are based on receptor categories and frequency of events occurring in one day. Table 3.11-3 summarizes the FTA vibration impact criteria.

Table 3.11-3. Federal Transit Administration Groundborne Vibration Impact Criteria

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch /sec)		
	Frequent Events ^a	Occasional Events ^b	Infrequent Events ^c
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB ^d	65 VdB	65 VdB
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	80 VdB

Source: Federal Transit Administration 2018.

GBV = groundborne vibration; VdB = vibration decibels.

^a "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

^b "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.

^c "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

^d This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. For equipment that is more sensitive, a detailed vibration analysis must be performed.

State

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation.

California Code of Regulations

The California Noise Insulation Standards found in the California Code of Regulations, Title 24 Section 1207.4 establish requirements for new residential units that may be subject to relatively high levels of exterior noise. In this case, the noise insulation criterion is 45 dB L_{dn}/CNEL inside noise-sensitive spaces.

California Department of Transportation

The California Department of Transportation (Caltrans) provides guidelines regarding vibration associated with construction and operation of transportation infrastructure. Table 3.11-4 provides Caltrans' vibration guidelines for potential damage to different types of structures.

Table 3.11-4. Caltrans Vibration Guidelines for Potential Damage to Structures

Structure Type and Condition	Maximum Peak Particle Velocity (PPV, in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation 2013b.

Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = peak particle velocity; in/sec = inches per second.

Groundborne vibration and noise can also disturb people, who are generally more sensitive to vibration during nighttime hours when sleeping than during daytime waking hours. Numerous studies have been conducted to characterize the human response to vibration. Table 3.11-5 provides Caltrans' guidelines regarding vibration annoyance potential (expressed here as PPV).

Table 3.11-5. Caltrans Guidelines for Vibration Annoyance Potential

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation 2013b.

Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = peak particle velocity; in/sec = inches per second.

Regional and Local

The Sacramento Campus is a University of California campus that conducts work within the University's mission on land that is owned or controlled by The Board of Regents of the University of California. As a State entity, the University is exempt under the State constitution from compliance with local land use regulations, including general plans, zoning, and ordinances whenever using property under its control in furtherance of its educational mission. However, the University seeks to develop its property in a manner that minimizes potential conflicts with the land use policies and plans of local jurisdictions to the extent feasible. The Sacramento Campus is in the city of

Sacramento. The following subsection summarizes policies contained in Sacramento's general plan regarding noise, as well as the City of Sacramento Noise Ordinance.

City of Sacramento General Plan

The most recent update to *Sacramento 2035 General Plan* was adopted in March of 2015. The goals and policies related to noise are intended to help control and reduce environmental noise in the city. The general plan also includes land use compatibility guidelines to help direct new development to occur only in areas with noise levels that are suitable for the types of development proposed. The compatible noise level is 60 dBA L_{dn} for single-family residential uses, and is 65 dBA L_{dn} for multi-family residential and hotel/motel uses. Schools, hospitals and nursing homes are considered compatible with exterior noise levels of up to 70 dBA L_{dn} . Refer to Table 3.11-6 for the exterior noise compatibility standards for all land uses in the City. The Sacramento general plan noise policies pertaining to the project include the following (City of Sacramento 2015).

Policy EC 3.1.1: Exterior Noise Standards. The City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in Table EC 1 [Table 3.11-6, General Plan Exterior Noise Compatibility Standards for Various Land Uses, below], to the extent feasible.

Policy EC 3.1.2: Exterior Incremental Noise Standards. The City shall require noise mitigation for all development that increases existing noise levels by more than the allowable increment shown in Table EC 2 [Table 3.11-7, General Plan Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dB(A)), below], to the extent feasible.

Policy EC 3.1.3: Interior Noise Standards. The City shall require new development to include noise mitigation to assure acceptable interior noise levels appropriate to the land use type: 45 dB(A) L_{dn} for residential, transient lodgings, hospitals, nursing homes and other uses where people normally sleep; and 45 dB(A) L_{dn} (peak hour) for office buildings and similar uses.

Policy EC 3.1.4: Interior Noise Review for Multiple, Loud Short-Term Events. In cases where new development is proposed in areas subject to frequent, high-noise events (such as aircraft over-flights, or train and truck pass-bys), the City shall evaluate noise impacts on any sensitive receptors from such events when considering whether to approve the development proposal, taking into account potential for sleep disturbance, undue annoyance, and interruption in conversation, to ensure that the proposed development is compatible within the context of its surroundings.

Policy EC 3.1.5: Interior Vibration Standards. The City shall require construction projects anticipated to generate significant amount of vibration to ensure acceptable interior vibration levels at nearby residential and commercial uses based on the current City or Federal Transit Administration (FTA) criteria.

Policy EC 3.1.7: Vibration. The City shall require an assessment of the damage potential of vibration-induced construction activities, highways, and rail lines in close proximity to historic buildings and archaeological sites and require all feasible mitigation measures be implemented to ensure no damage would occur.

Policy EC 3.1.8: Operational Noise. The City shall require mixed-use, commercial, and industrial projects to mitigate operational noise impacts to adjoining sensitive uses when operational noise thresholds are exceeded.

Policy EC 3.1.10: Construction Noise. The City shall require development projects subject to discretionary approval to assess potential construction noise impacts on nearby sensitive uses and to minimize impacts on these uses, to the extent feasible. (City of Sacramento 2015)

Table 3.11-6. General Plan Exterior Noise Compatibility Standards for Various Land Uses

Land Use Type	Highest Level of Noise Exposure regarded as “Normally Acceptable” ^a (L _{dn} ^b or CNEL ^c)
Residential—Low Density Single Family, Duplex, Mobile Homes	60 dBA ^{d, e}
Residential—Multi-family ^g	65 dBA
Urban Residential Infill ^h and Mixed-Use Projects ^{i, j}	70 dBA
Transient Lodging—Motels, Hotels	65 dBA
Schools, Libraries, Churches, Hospitals, Nursing Homes	70 dBA
Auditoriums, Concert Halls, Amphitheaters	Mitigation based on site-specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site-specific study
Playgrounds, Neighborhood Parks	70 dBA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75 dBA
Office Buildings—Business, Commercial and Professional	70 dBA
Industrial, Manufacturing, Utilities, Agriculture	75 dBA

Source: City of Sacramento 2015.

^a As defined in the Governor’s Office of Planning and Research Guidelines, “Normally Acceptable” means that the “specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements.”

^b L_{dn}, or day night average level, is an average 24-hour noise measurement that factors in day and night noise levels.

^c CNEL, or community noise equivalent level, measurements are a weighted average of sound levels gathered throughout a 24-hour period.

^d Applies to the primary open space area of a detached single-family home, duplex, or mobile home, which is typically the backyard or fenced side yard, as measured from the center of the primary open space area (not the property line). This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches.

^e dBA, or A-weighted decibel scale, is a measurement of noise levels.

^f The exterior noise standard for the residential area west of McClellan Airport known as McClellan Heights/Parker Homes is 65 dBA.

^g Applies to the primary open space areas of townhomes and multi-family apartments or condominiums (private year yards for townhomes; common courtyards, roof gardens, or gathering spaces for multi-family developments). These standards do not apply to balconies or small attached patios in multistoried multi-family structures.

^h With land use designations of Central Business District, Urban Neighborhood (Low, Medium, or High) Urban Center (Low or High), Urban Corridor (Low or High).

ⁱ All mixed-use projects located anywhere in the city of Sacramento.

^j See notes d and g above for definition of primary open space areas for single-family and multi-family developments.

Table 3.11-7. General Plan Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dBA)

Residences and Buildings Where People Normally Sleep ^a		Institutional Land Uses with Primarily Daytime and Evening Uses ^b	
Existing L _{dn}	Allowable Noise Increment	Existing Peak Hour L _{eq}	Allowable Noise Increment
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	0	75	1
80	0	80	0

Source: City of Sacramento 2015.

dBA = A-weighted decibel; L_{dn} = day night average level; L_{eq} = equivalent sound level.

^a This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

^b This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.

Sacramento City Code Noise Ordinance

Chapter 8.68 of the Sacramento City Code governs noise and vibration within the city. Noise thresholds from the City Municipal Code that are relevant for the 2020 LRDP Update are presented below.

8.68.060 Exterior Noise Standards

- A. The following noise standards unless otherwise specifically indicated in this article shall apply to all agricultural and residential properties.
 1. From 7 AM to 10 PM the exterior noise standard shall be 55 dBA.
 2. From 10 PM to 7 AM the exterior noise standard shall be 50 dBA.
- B. It is unlawful for any person at any location to create any noise which causes the noise levels when measured on agricultural or residential property to exceed for the duration of time set forth following [shown in Table 3.11-8], the specified exterior noise standards in any 1 hour by:

Table 3.11-8. City of Sacramento Noise Ordinance Cumulative Intrusive Sound Limits

Cumulative Duration of the Intrusive Sound	Allowable Decibels
Cumulative period of 30 minutes per hour	0
Cumulative period of 15 minutes per hour	+5
Cumulative period of 5 minutes per hour	+10
Cumulative period of 1 minute per hour	+15
Level not to be exceeded for any time per hour	+20

Source: Sacramento City Code, Chapter 8.68, Section 8.68.060, 2009.

- C. Each of the noise limits specified in subsection B of this section shall be reduced by five dBA for impulsive or simple tone noises, or for noises consisting of speech or music.
- D. If the ambient noise level exceeds that permitted by any of the first four noise limit categories specified in subsection B of this section, the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category. (Prior code § 66.02.201)

8.68.080 Exemptions

The following applicable activities shall be exempted from the provisions of this chapter:

- A. School bands, school athletic and school entertainment events. School entertainment events shall not include events sponsored by student organizations.
- B. Activities conducted on parks and public playgrounds, provided such parks and public playgrounds are owned and operated by a public entity.
- C. Any mechanical device, apparatus or equipment related to or connected with emergency activities or emergency work.
- D. Noise sources due to the erection (including excavation), demolition, alteration or repair of any building or structure between the hours of 7 AM and 6 PM, on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday, and between 9 AM and 6 PM on Sunday; provided, however, that the operation of an internal combustion engine shall not be exempt pursuant to this subsection if such engine is not equipped with suitable exhaust and intake silencers which are in good working order. The director of building inspections may permit work to be done during the hours not exempt by this subsection in the case of urgent necessity and in the interest of public health and welfare for a period not to exceed three days. Application for this exemption may be made in conjunction with the application for the work permit or during progress of the work.
- G. Noise sources associated with maintenance of street trees and residential area property provided said activities take place between the hours of 7 AM and 6 PM.

8.68.100 Schools, Hospitals and Churches

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use to exceed the noise standards specified in Section 8.68.060 of this chapter or to create any noise which unreasonably interferes with the use of such institution or unreasonably disturbs or annoys patients in the hospital. In any disputed case, interfering noise which is 10 dBA or more, greater than the ambient noise level at the building, shall be deemed excessive and unlawful.

8.68.110 Residential pumps, fans and air conditioners.

- A. It is unlawful for any person to operate any residential fans, air conditioners, stationary pumps, stationary cooling towers, stationary compressors, similar mechanical device or any combination thereof installed after the effective date of this chapter in any manner so as to create any noise which would cause the maximum noise level to exceed:
 - 1. 60 dBA at any point at least one foot inside the property line of the affected residential or agricultural property and three to five feet above ground level;
 - 2. 55 dBA in the center of a neighboring patio three to five feet above ground level;
 - 3. 55 dBA outside of the neighboring living area window nearest the equipment location, measurements shall be taken with the microphone not more than three feet from the window opening but at least three feet from any other surface.

8.68.160 Outdoor recreational activities.

- A. It is unlawful for any person to conduct, or permit to be conducted on its property, any outdoor recreational activity, including, but not limited to, athletic events, sporting events, entertainment events and concerts at which amplified noise, amplified music, or amplified sound exceeding the following levels is created: ninety-six (96) dBA L_{eq} during the months of September and October; ninety-eight (98) dBA L_{eq} during the months of November through August. The noise, music or sound shall be measured at the sound booth or other reasonable location which is not more than one hundred fifty (150) feet from the source. Every person conducting, or permitting to be conducted, on its property, any outdoor recreational activity shall, upon request, permit the chief of the environmental health division, Sacramento environmental management department, or the chief's designee, to place a sound level monitor (with or without an accompanying staff member) at a location described in this subsection to monitor sound levels.
- B. Time Limits.
1. Sunday through Thursday. Except as provided in subsection (B)(2) of this section, the amplified sound associated with the outdoor activities described in subsection A of this section shall commence not earlier than nine a.m. and shall be terminated no later than ten p.m. on Sunday, Monday, Tuesday, Wednesday and Thursday.
 2. Friday, Saturday and the Day Before Specified Holidays. The amplified sound associated with the outdoor activities described in subsection A of this section shall commence not earlier than nine a.m. and shall be terminated no later than eleven p.m. on Friday, Saturday and the day before the specified holidays listed below. For purposes of this provision, the specified holidays are the holidays specified in Government Code Sections 6700 and 6701, as those sections may be amended from time to time. (Prior code § 66.02.211)

8.68.200 Specific unlawful noises.

Notwithstanding any other provision of the chapter to the contrary, the following acts, among others, are declared to be loud, disturbing, and unnecessary noises in violation of this chapter, but such enumeration shall not be deemed to be exclusive, namely:

- A. Pile Drivers, Hammers, Etc. The operation between the hours of ten p.m. and seven a.m. of any pile driver, steam shovel, pneumatic hammer, derrick, steam or electric hoist or other appliance, the use of which is attended by loud or unusual noise.
- B. Tools. The use or operation between the hours of ten p.m. and seven a.m. of any power saw, power planer, or other powered tool or appliance or saw or hammer, or other tool, so as to disturb the quiet, comfort, or repose of persons in any dwelling, hotel, motel, apartment, or other type of residence, or of any person in the vicinity.

Environmental Setting

This section describes the environmental setting relevant to noise in the 2020 LRDP Update plan area. The section provides background information related to noise and vibration and a discussion of noise sources and ambient noise levels on the Sacramento Campus under existing conditions.

Project Site and Surrounding Land Uses

The UC Davis Sacramento Campus is approximately 146 acres (with the addition of the Rehab Hospital) and is approximately 2.5 miles southeast of downtown Sacramento and 17 miles east of the UC Davis main campus in Davis. The Sacramento Campus is bounded by V Street on the north, Stockton Boulevard on the west, Broadway to the south, and a residential neighborhood to the east (Figure 2-3).

The University owns several properties surrounding the campus site, including buildings along Stockton Boulevard and Broadway. The University also leases offsite facilities in Sacramento for clinics and offices totaling over 500,000 square feet. Leased spaces and other off-campus buildings west of Stockton Boulevard and south of Broadway, are not part of the 2020 LRDP Update plan area and are outside the scope of this Supplemental EIR. The Broadway Building is located west of Stockton Boulevard, but this building is owned and operated by the University and is included within the plan area. Figure 2-4 shows the existing conditions of the Sacramento Campus.

Land uses surrounding the campus site are residential neighborhoods composed of single-family homes and some commercial and urban development (Figure 2-2). Stockton Boulevard, along the western boundary of the campus, is lined mostly with one- to three-story office buildings and a small amount of retail. A Shriners Hospital is on Stockton Boulevard just south of X Street across from the UC Davis Health System Main Hospital. The Main Hospital is at 2351 Stockton Boulevard, with commercial uses on the other side of Stockton Boulevard and the Elmhurst neighborhood to the northwest (Figure 2-3).

The Elmhurst neighborhood to the north and east of the campus is a residential neighborhood consisting primarily of single-family homes. To the west (west of commercial business buildings along Stockton Boulevard) is the North Oak Park neighborhood, with a mix of single-family and multi-family residences.

The Language Academy of Sacramento (school), Sacramento County Department of Social Services, State Department of Justice and Law Enforcement, and State Employment Development Offices are along 49th and 50th Streets and north of Broadway. The Department of Motor Vehicles and Sacramento County Coroner and Crime Lab Building and other public uses are south of Broadway and west of the Broadway Building. The Broadway Building, which is owned by the UC Davis Health System, houses administrative offices and is part of the 2020 LRDP Update plan area.

Existing Noise Sources

Roadways and Freeways

The campus is in an area with heavy roadway and freeway traffic, outside of residential neighborhoods including traffic along Stockton Boulevard and Broadway that are adjacent to the campus. The major roadways affect noise levels in the project area.

Stationary Sources

Stationary noise sources in the project area include common building mechanical equipment and equipment associated with the Sacramento Campus Central Cogeneration Plant (Central Energy Plant), such as air conditioners, chillers, ventilation systems, pumps, cooling towers, and emergency generators.

Aircraft Overflights

The closest airport to the UC Davis Sacramento Campus is the Sacramento Executive Airport, approximately 3 miles southwest of the project site. While noise from aircraft overflights is occasionally perceptible within the project area, it does not have a substantial influence on the overall noise environment in the campus vicinity.

Emergency Helicopter Operations

The project site is currently exposed to noise from helicopter takeoff and landing operations associated with the transport of patients requiring urgent care. Currently, helicopters arriving at the Sacramento Campus come from several different agencies and private services, as the UC Davis Medical Center does not operate its own helicopter service. The emergency helipad is on the rooftop of the 12-story Davis Tower. During the year 2019, 1,127 helicopter landing and takeoff cycles occurred at this helipad (Davis pers. comm. [b]). This equates to an average of approximately 3 helicopter landing and takeoff cycles per day. Figure 3.11-1 shows the 65 CNEL contour based on 1,127 annual operations. This contour was extrapolated from contours for 2009 and 2025 conditions reported in the 2010 LRDP Final EIR.

Characterization of Ambient Noise Levels

The ambient noise levels in the project vicinity are dominated largely by traffic along major roadways in the project area. The monitoring or measuring of ambient noise is commonly done to help characterize the existing ambient noise levels in the vicinity of a given project. The 2010 LRDP Noise Analysis included ambient noise monitoring data from various locations on and near the Sacramento Campus. The characterization of ambient noise for the 2020 LRDP Update through noise measurements is not possible at this time because the State of California and the Sacramento region have been under shelter in place orders as a result of the coronavirus pandemic. Ambient noise monitoring results from numerous months of 2020 would therefore not be representative of a realistic ambient condition because the number of cars on roadways in the project area is expected to be substantially reduced from typical conditions. However, there have not been major changes to the Sacramento Campus since publication of the 2010 LRDP Final EIR, and ambient noise related to stationary sources is similar to those conditions.

Noise monitoring was therefore not conducted to characterize the ambient noise conditions for the 2020 LRDP Update, since measurements could misrepresent actual ambient noise in the project area under typical conditions without the coronavirus pandemic. This Supplemental EIR includes ambient noise levels collected for the 2010 LRDP analysis and presents modeled existing traffic noise levels (from data collected in 2019) to provide a reasonably conservative characterization of the ambient noise level in the project area.

For the 2010 LRDP EIR, ambient noise levels were monitored by Illingworth & Rodkin, Inc., on January 27 and 28, 2010. Refer to Figure 3.11-2 for the noise measurement locations. Short-term measurements (15 minutes in duration) were taken at 10 locations and unattended long-term (24 hours in duration) measurements were taken at 3 locations (University of California 2010). The measurement locations are shown in Figure 3.11-2. The off-campus long term noise measurement locations were selected to be representative of noise-sensitive residential receptors at the campus periphery that are most likely to be affected by the additional noise that would be generated by LRDP-related noise sources. On-campus long term noise measurements were conducted near the Central Energy Plant to document noise emissions from this facility. Except near the Central Energy Plant or other discrete noise sources, on-campus noise levels are judged to be at or below the levels documented at the project periphery, therefore additional on-campus long-term measurement locations were considered not necessary. Measured data reported in the environmental noise assessment are shown in Table 3.11-9 and Table 3.11-10. Table 3.11-9 shows that measured ambient noise levels range from 59 to 66 dBA L_{eq} in the Sacramento Campus vicinity.

Table 3.11-10 shows the results of the short-term measurements. The measured ambient noise levels range from 52 to 62 dBA L_{eq} along the campus perimeter. Near the Central Energy Plant (ST-5a to ST-5f), the measured noise levels range from 68 dBA at 100 feet from the western face of the cooling tower structure to between 54 and 59 dBA at the sidewalk setback surrounding the Central Energy Plant building (ST-b to ST-e). Using the distance attenuation relationship for a fixed noise source of 6 dB sound level reduction for each doubling of the distance from the source, noise from the Central Energy Plant operations at the closest edge of the campus is 40 dBA or less (Illingworth & Rodkin 2010).

Table 3.11-9. 2010 LRDP Long-Term Noise Measurement Data Summary

2010 LRDP Site ID	Measurement Location	Measurement Date	24-hour L_{eq} (dBA)	24-hour L_{dn} (dBA)
LT-1	Utility pole at the edge of the single-family residential area north of V Street opposite the hospital emergency/loading entrance	1/27/10– 1/28/10	66	67
LT-2	Utility pole at residential property line at end of Y Street (eastern edge of the campus)	1/27/10– 1/28/10	59	61
LT-3	Light standard in residential area at the western edge of the campus (approximately 20 feet from the centerline of Y Street and 200 feet from the centerline of Stockton Boulevard)	1/27/10– 1/28/10	62	63

Source: University of California 2010.

dBA = A-weighted decibels; L_{dn} = day night average level; L_{eq} = equivalent sound level.

Table 3.11-10. 2010 LRDP Short-Term Noise Measurement Data Summary

2010 LRDP Site ID	Measurement Location	Measurement Date	Noise Sources	L _{eq}	L _{dn}
ST-1	V Street near Emergency Room	1/28/10	Traffic	52	53
ST-2	Residence at 2nd Avenue Opposite MIND Institute Lab and Clinic	1/28/10	Traffic	53	60
ST-3	Broadway Senior Center	1/28/10	Traffic	61	68
ST-4	Residential area near 2nd Avenue and Stockton Boulevard	1/28/10	Traffic	62	67
ST-5a	Perimeter of Central Energy Plant; Near Facility Support Services Building	1/28/10	Central Energy Plant/ mechanical equipment	68	68
ST-5b	Perimeter of Central Energy Plant	1/28/10	Central Energy Plant/ mechanical equipment	54	59
ST-5c	Perimeter of Central Energy Plant	1/28/10	Central Energy Plant/ mechanical equipment	55	59
ST-5d	Perimeter of Central Energy Plant	1/28/10	Central Energy Plant/ mechanical equipment	56	60
ST-5e	Perimeter of Central Energy Plant	1/28/10	Central Energy Plant/ mechanical equipment	59	61
ST-5f	Perimeter of Central Energy Plant	1/28/10	Central Energy Plant/ mechanical equipment	59	61

Source: University of California 2010.

L_{dn} = day night average level; L_{eq} = equivalent sound level.

Traffic noise modeling can also help estimate existing ambient noise levels in the vicinity of a project, because traffic noise is often the dominating noise source affecting ambient levels in urban environments. In the Sacramento Campus vicinity, other noise sources (such as vehicles entering or exiting the hospital emergency exist) also influence overall ambient noise levels. However, to help estimate existing ambient noise levels on and around the campus, existing traffic noise levels in the area were modeled based on Baseline (2019) traffic data provided by the project traffic engineer. Refer to Table 3.11-11 for modeled existing noise levels along roadway segments in the campus area.

Table 3.11-11. Modeled Existing Traffic Noise Levels in LRDP Vicinity

Roadway	Segment	Existing Noise Level (dBA L_{dn})
Stockton Boulevard	T Street to 39th Street/Miller Way	69.3
Stockton Boulevard	39th Street/Miller Way to X Street	69.6
Stockton Boulevard	X Street to 2nd Avenue	68.4
Stockton Boulevard	2nd Avenue to 3rd Avenue	68.9
Stockton Boulevard	3rd Avenue to Broadway	68.9
Stockton Boulevard	South of Broadway	69.7
Broadway	West of Stockton Boulevard	68.6
Broadway	Stockton Boulevard to 49th Street	67.1
Broadway	49th Street to 50th Street	65.9
Broadway	50th Street to 59th Street	66.8
Broadway	East of 59th Street	66.4
V Street	West of 49th Street	58.3
V Street	East of 49th Street	59.7
50th Street	North of Broadway	62.3
2nd Avenue	West of Stockton Boulevard	61.3
2nd Avenue	East of Stockton Boulevard	63.0

L_{dn} = day night average level.

As shown in Table 3.11-11, modeled traffic noise levels along roadway segments near the project vary, with noise levels of between 68.4 and 69.7 dBA L_{dn} along Stockton Boulevard, noise levels of between 65.9 and 68.6 dBA L_{dn} along Broadway, and noise levels of 61.3 and 63.0 along 2nd Avenue, east and west of Stockton Boulevard. Existing noise levels along 50th Street north of Broadway were modeled to be approximately 62.3 dBA L_{dn} , and noise levels along V Street, a primarily residential street north of the campus, were modeled to be between 58.3 and 59.7 dBA L_{dn} .

3.11.3 Environmental Impacts

This section describes the environmental impacts associated with noise that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

The 2020 LRDP Update makes minor adjustments to the land use designations and growth assumptions that were envisioned in the 2010 LRDP. Future development under the 2020 LRDP Update would be expected to result in the generation of noise and vibration, and potential noise and vibration impacts of the 2020 LRDP Update are analyzed at a program level.

Construction Noise

As discussed above, implementation of the 2020 LRDP Update would result in construction noise during the construction of future development projects on the UC Davis Sacramento Campus. The

construction noise analysis assesses potential noise impacts from equipment that would likely be used for future development projects at the Sacramento Campus with implementation of the 2020 LRDP Update.

Construction noise levels from development under the 2020 LRDP Update were estimated based on reference emission levels, and usage factors from the Federal Highway Administration *Road Construction Noise Model User's Guide* (Federal Highway Administration 2006). The methodology for the analysis of construction noise contained in FTA's *Transit Noise and Vibration Impact Assessment Manual* (Federal Transit Administration 2018) was used to evaluate potential combined construction noise levels generated during various construction phases. Estimated levels were then compared to applicable construction-noise standards. A programmatic construction noise analysis was conducted by calculating the noise levels of the three loudest pieces of equipment typically used for each construction phase for typical construction projects of the size and scale expected under the 2020 LRDP Update.

Note that noise sources due to the erection (including excavation), demolition, alteration, or repair of any building or structure between the hours of 7:00 a.m. and 6:00 p.m., on Monday through Saturday, and between 9:00 a.m. and 6:00 p.m. on Sunday are exempt from the numerical standards for noise in Sacramento, provided that the operation of an internal combustion engine is equipped with suitable exhaust and intake silencers in good working order. Most construction activities for future development under implementation of the 2020 LRDP Update would occur during these hours and would therefore not result in significant construction noise impacts (assuming equipment is outfitted with exhaust and intake silencers). However, since some nighttime construction may occur for certain future projects, the potential for construction noise impacts to occur during non-exempt hours is also considered.

Outside of these exempt daytime hours, construction noise in Sacramento is limited by the Exterior Noise Standards contained in the Sacramento City Code (55 dBA from 7:00 a.m. to 10:00 p.m. and 50 dBA from 10:00 p.m. to 7:00 a.m.). Therefore, outside of the daytime exempt hours, construction noise would be limited to 55 dBA between the hours of 6:00 p.m. and 10:00 p.m. and 50 dBA between the hours of 10:00 p.m. and 7:00 a.m.

Construction Haul Truck Noise

Construction haul truck noise was analyzed for the project. The Sacramento City Code does not include a specific threshold that pertains to construction haul truck noise. Therefore, anticipated loudest-hour haul truck noise was assessed by modeling Baseline (2019) and Baseline (2019) plus estimated reasonable worst-case haul truck trip traffic noise during a peak hour. Impacts would be identified if haul truck trips on any roadway segments in the project area would result in a 3 dB increase (considered barely audible) in noise.

Precise details about the number of haul trucks that may occur on a given day for overlapping future development projects under the 2020 LRDP Update are not known with certainty at this time, so specific details related to haul truck trips for the Aggie Square Phase I project (which is analyzed in Volume 2 of this Supplemental EIR) were used to extrapolate estimated daily haul truck volumes for the LRDP overall.

Detailed construction information was provided for the Aggie Square Phase I project by Wexford, including the number of total haul truck trips expected for the project by construction phase. The Aggie Square Phase I project represents approximately 20 percent of the total proposed

development (of 7,070,000 square feet) under the 2020 LRDP Update. Therefore, most future projects under the 2020 LRDP Update would be expected to have a smaller number of haul trucks than would be required for the Aggie Square Phase I project. Construction for this project would occur between 2021 and 2023, during which time several other projects that are part of the 2020 LRDP Update could also be undergoing construction.

Based on the Aggie Square Phase I haul truck and construction schedule information, up to 88 daily haul truck trips would occur on a reasonable worst-case day with the most overlapping phases of construction. The number of daily truck trips assumed during a reasonable worst-case month for Aggie Square Phase I was doubled to provide a proxy analysis for overlapping LRDP construction on a reasonable worst-case day (e.g., this assumes up to 40 percent of the total LRDP development area was being constructed simultaneously). Based on these assumptions, there could be up to 176 total haul truck trips per day entering or exiting the campus during construction related to implementation of the 2020 LRDP Update. This analysis also assumed that all concurrent phases of all concurrent development projects would require haul trucks.

Typically, haul truck trips are spread out over the construction day. However, to provide a conservative assessment, this analysis assumes that approximately one-third of the average daily truck trips would occur during the worst-case hour (Dulcich pers. comm.). Projects occurring in different areas of the campus would be expected use different routes. For example, some haul trucks would exit the campus along Stockton Boulevard from either X Street or 2nd Avenue and turn right to travel north on Stockton Boulevard toward the U.S. Route 50 (US 50) freeway. Other trucks may exit the campus from X Street or 2nd Avenue and then travel south on Stockton Boulevard to Broadway, and then travel east or west on Broadway. It is likely that haul truck trips would be spread out relatively evenly over all possibly hauling routes. To provide a more conservative analysis, it is assumed that up to two-thirds of the hourly truck trips could be using the same roadway segments. This would result in up to approximately one-fifth of daily haul trucks using a given roadway segment during a reasonable worst-case hour.

Operational Noise

Implementation of the 2020 LRDP Update would result in increases in operational noise because future planned projects at the Sacramento Campus would be developed between 2020 and 2040. The development of these projects would generate additional vehicular traffic, which is the primary source of noise throughout urban areas and cities. The Central Energy Plant currently provides normal and emergency electrical power, chilled and hot water for heating and cooling, and process steam to most campus buildings. Existing noise-generating equipment at the Central Energy Plant include five diesel emergency generators, five steam boilers and eight hot water boilers, one gas turbine, and four induced draft cooling towers. Additional equipment in the form of one 2,000-ton chiller would be installed at the Central Energy Plant as a result of the implementation of the 2020 LRDP Update to accommodate new campus buildings. Some projects on the site, such as On-Campus Partner Building development projects, would also have building-specific mechanical equipment that could generate noise. The equipment could include (but would not be limited to) air handling units, packaged HVAC units, ventilation fans, and chillers. Further, the use of helicopters at the campus would be expected to increase under the 2020 LRDP Update because of the increase in the square footage of hospital uses, likely resulting in additional noise from aircraft overflights in the project area.

Each of these sources, as well as the methodology for how they are analyzed, is described below.

Traffic Noise

To determine whether development under the 2020 LRDP Update would result in a substantial permanent increase in traffic noise levels, noise from the increased vehicle traffic that could be generated under the 2020 LRDP Update was analyzed using traffic data received by the project traffic engineer. Vehicular traffic noise in the campus vicinity was modeled by using Average Daily traffic (ADT) volumes along roadway segments and vehicle mix assumptions (i.e., the proportion of heavy vehicles on a given segment) provided by the project traffic engineer (Hananouchi pers. comm.). For vehicular traffic noise impacts, the following thresholds were applied to determine whether development under the 2020 LRDP Update would result in significant traffic noise impacts: (1) in places where the existing (based on Baseline [2019] conditions) and resulting (under 2040 with project conditions) noise levels do not exceed the “Normally Acceptable” land use compatibility standard for the types of land uses located along the roadway segment (Table 3.11-6), an increase of more than 5 dB is considered a significant vehicular traffic noise increase, and (2) in places where the existing or resulting noise levels do exceed the “Normally Acceptable” level based on the land use compatibility chart (Table 3.11-6), any noise increase greater than 3 dB is considered a significant vehicular traffic noise increase. As discussed previously, an increase of less than 3 dB is generally not perceptible outside of controlled laboratory conditions. However, in areas where the existing ambient noise levels (based on Baseline [2019] conditions) are already high, a lower significance threshold of 3 dB is appropriate.

Traffic noise modeling for Baseline (2019), 2040 No Project, and 2040 Full Implementation of 2020 LRDP Update conditions was conducted using a spreadsheet based on the FHWA Traffic Noise Model, version 2.5. This spreadsheet calculates the vehicular traffic noise level at a fixed distance, and considers the vehicular traffic volume, roadway speed, and vehicle mix that is predicted to occur under each condition. For the assessment of project-level traffic noise impacts, average daily traffic volumes were used to determine if significant traffic noise increases would result from implementation of the 2020 LRDP Update.

Stationary Noise Sources

With regard to stationary sources of operational noise, this assessment considers the potential for noise from stationary equipment (e.g., mechanical equipment such as boilers, chillers, and emergency generators) to exceed applicable noise limits.

Potential noise impacts from the addition of a chiller to the existing Central Energy Plant were analyzed, as were potential noise impacts from mechanical equipment expected to be installed for future projects implemented as part of the 2020 LRDP Update (e.g., Aggie Square Phase I). Noise impacts from the testing of new emergency generators at the Central Energy Plant and the Davis Tower as part of the 2020 LRDP Update were also analyzed based on information provided by UC Davis, as were potential noise impacts from other generators expected to be installed for future projects under the 2020 LRDP Update (e.g., Aggie Square Phase I).

Amplified Music or Speech

The potential for amplified music or speech at events resulting from implementation of the 2020 LRDP Update (e.g., events at Aggie Square) to exceed applicable noise limits was also analyzed based on information about expected future events provided by UC Davis. Although most of the campus area would not be expected to have large gatherings or events, the Aggie Square Phase I area of the Sacramento Campus would potentially have weekly and monthly gatherings. Specifically, UC Davis

estimates that there could be up to 1 event per week on weekday afternoons in Aggie Square outdoor areas with up to 150 people and up to 1 larger monthly event with a maximum of 1,800 people in attendance.

According to the Sacramento City Code, Section 8.68.160 (Outdoor recreational activities), it is unlawful for any person to conduct entertainment events and concerts at which amplified noise, amplified music, or amplified sound that exceeds 96 dBA L_{eq} during the months of September and October or 98 dBA L_{eq} during the months of November through August, as measured at the sound booth or other reasonable location that is not more than 150 feet from the noise source. In addition, time limits apply to amplified speech or music from such events. In general, events using amplified noise are limited to the hours of 9:00 a.m. to 10:00 p.m. Sunday through Thursday and 9:00 a.m. to 11:00 p.m. Friday, Saturday, and the day before certain holidays.

Loading Activity Noise

In general, the loading and unloading of goods is a common occurrence in cities and urban environments. The Sacramento Campus is in an urban environment near major thoroughfares (e.g., Stockton Boulevard and Broadway) and close to the US 50 freeway. Modeled existing (Baseline [2019]) noise levels due to traffic activity alone along Stockton were in the range of 68 to 70 dBA L_{dn} and modeled existing traffic noise levels along Broadway were in the range of 66 to 69 dBA L_{dn} (refer to Table 3.11-11). The potential for loading activity increases resulting from 2020 LRDP Update implementation to result in increases in ambient noise in the campus area was analyzed at a program level, based on the likelihood for substantial increases in ambient noise to occur.

Helicopter Noise

Helicopter noise is evaluated in terms of the Single Event Level (SEL) and CNEL. SEL values would be unchanged with implementation of the 2020 LRDP Update; it is assumed that the helicopter equipment identified in the 2010 LRDP Final EIR would continue to be used. The CNEL noise contours reported in the 2010 LRDP Final EIR and shown in Figure 3.11-1 are based on annual helicopter operations of 720 landing and takeoff cycles in 2009 and annual helicopter operations of 948 landings and takeoff cycles projected for 2025. The assessment of impacts under 2040 conditions is based on a projection of 1,541 annual helicopter landing and takeoff cycles in 2040.

Future helicopter operations at the Medical Center Tower/Davis Tower II Heliport were assumed to increase commensurate with growth in hospital gross square footage (gsf) on the Sacramento Campus. This approach assumes that all future hospital uses would influence medical helicopter transport and is therefore likely to be conservative. Because helicopters are primarily used to transport patients in critical condition, it is more likely that only growth in emergency and critical care services would increase emergency helicopter activity. While the amount of future hospital building gross square footage is known for the 2020 LRDP Update, the exact increase in square footage that would be dedicated to emergency and critical care services is not known. Annual aircraft operations were therefore conservatively quantified by multiplying existing helicopter operations by the expected growth in total hospital gross square footage with buildout of the 2020 LRDP Update.

Vibration Impacts

The discussion below summarizes the methodology applied in this assessment of potential annoyance- and damage-related vibration impacts from construction of development under the

2020 LRDP Update. Operations associated with subsequent development are not anticipated to generate perceptible levels of vibration at either onsite or offsite receptors. No major sources of vibration are anticipated with any of the new structures of the 2020 LRDP Update.

Vibration-Related Annoyance

The City's general plan environmental constraints section pertaining to noise provides requirements for interior vibration standards and damage to historic or archaeological structures but does not provide specific vibration thresholds. In the absence of significance thresholds for vibration from construction, the *Sacramento 2035 General Plan* states that the FTA vibration criteria can be used. The FTA's general assessment criteria for evaluating potential construction-generated vibration impacts is included in Table 3.11-12. This table parses out potential annoyance effects related to interference with interior operations, sleep, and institutional daytime use as a function of the frequency of the vibration event according to three land use categories.

Table 3.11-12. Federal Transit Administration General Assessment Criteria for Groundborne Vibration

Land Use Category	Impact Levels (VdB; relative to 1 micro-inch/second)		
	Frequent Events ^a	Occasional Events ^b	Infrequent Events ^c
Category 1: Buildings where vibration would interfere with interior operations	65 ^d	65 ^d	65 ^d
Category 2: Residences and buildings where people normally sleep	72	75	90
Category 3: Institutional land uses with primarily daytime uses	75	78	83

Source: Federal Transit Administration 2018.

VdB = vibration decibels.

^a "Frequent events" is defined as more than 70 vibration events from the same source per day.

^b "Occasional events" is defined as 30 to 70 vibration events from the same source per day.

^c "Infrequent events" is defined as fewer than 30 vibration events from the same source per day.

^d This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research would require detailed evaluation to define the acceptable vibration levels.

Except for long-term occupational exposure, vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that can affect concentration or disturb sleep. People may tolerate infrequent, short-duration vibration levels, but human annoyance to vibration becomes more pronounced if the vibration is continuous or occurs frequently

Vibration-Related Structural Damage

To determine if construction activities have the potential to damage nearby buildings, vibration levels at nearby receptors are calculated using source vibration levels and the attenuation equation of $PPV = PPV_{ref} \times (25/Distance)^{1.5}$ (Federal Transit Administration 2018). These calculated values are then compared to structural damage criteria. For the purposes of this analysis, the California Department of Transportation (Caltrans) provided guidelines regarding vibration damage effects are used. Table 3.11-4 provides Caltrans' vibration guidelines for potential damage to different types of structures.

A structure's susceptibility to vibration-induced damage depends on its age, condition, distance from the vibration source, and the vibration level. Vibration impacts on structures are usually significant if construction vibration could result in structural or cosmetic damage or, in the case of a historic resource, materially alter the resource pursuant to CEQA Guidelines section 15064.5. Depending on a structure's condition, potential vibration-induced damage may be cosmetic (e.g., plaster or wood ornamentation may be damaged) or structural, in which case the integrity of the building may be threatened.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Generation of a 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?

While City of Sacramento standards are not applicable to the University of California, UC Davis does not have noise standards for the Sacramento Campus. For purposes of this Supplemental EIR, the City of Sacramento noise thresholds are utilized to identify the significance of noise impacts.

- Generation of excessive groundborne vibration or groundborne noise levels.
- The exposure of people residing or working in the project area to excessive noise levels from aircraft activity 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.

Impact LRDP-NOI-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from construction activities in excess of applicable standards

Haul truck noise during construction was determined to result in less-than-significant noise increase in the campus vicinity. With regard to construction noise, although most construction activities for future projects under the 2020 LRDP Update would occur during daytime hours when construction noise is exempt from City of Sacramento standards used in this Supplemental EIR, construction activities would not be strictly limited to these hours. Therefore, because construction activity may occur outside of these areas and may involve equipment that could generate noise in excess of applicable thresholds at nearby noise-sensitive land uses, construction noise impacts would be considered significant. Mitigation Measures LRDP-NOI-1 would reduce this impact, but not necessarily to a less-than-significant level. Therefore, this impact would be considered **significant and unavoidable**

Construction Noise

Construction as part of implementing the 2020 LRDP Update would involve the use of heavy equipment and would generate construction noise in the plan area. Construction projects that would occur under the 2020 LRDP Update include new building construction, parking and mobility improvements, existing building renovations and demolition, and new open space. Construction noise levels at or near construction sites in the campus area would fluctuate depending on the particular type of construction equipment, the number of pieces of equipment being used, and

duration of use. Noise levels associated with construction activities occurring during the more noise-sensitive evening and nighttime hours are of increased concern.

Construction equipment would vary day to day depending on the particular project or projects being constructed, the particular phase of construction, and the specific activities occurring. Typical construction activities for future projects would include demolition, site preparation, grading, building and roadway construction, utilities installation, paving, and the application of architectural coating (e.g., paints, varnishes, and stains). Each of these phases of construction involve the use of different equipment. Typical noise levels generated by various types of construction equipment likely to be used are identified in Table 3.12-13.

Table 3.11-13. Typical Construction Equipment Noise Levels

Construction Equipment	Noise Level at 50 Feet (dBA, L_{max})	Noise Level at 100 Feet (dBA, L_{max})
Impact pile driver	101 (intermittent)	95 (intermittent)
Hoe ram (impact hammer)	90	84
Concrete saw	90	84
Crusher	87	81
Jackhammer ^a	89	83
Grader	85	79
Auger drill rig	84	78
Tractor	84	78
Bulldozer	82	76
Concrete pump truck	81	75
Excavator	81	75
Crane	81	75
Roller	80	74
Front-end loader	79	73
Air compressor	78	72
Backhoe	78	72
Paver	77	71
Dump truck	76	70

Source: Federal Highway Administration 2006.

dBA = A-weighted decibels; L_{max} = maximum sound level.

As shown in Table 3.11-13, noise levels from individual pieces of construction equipment at 50 feet are typically in the range of 76 dBA to 101 dBA L_{max} and (assuming standard utilization rates) 70 to 95 dBA L_{eq} . Noise from the operation of construction equipment would generally be expected to result in increases in ambient noise in the campus area, as typically baseline noise levels in the project area were measured to be between 52 and 68 dBA L_{eq} during daytime hours (based on the measurement information presented in the 2010 LRDP Final EIR).

In addition, it is likely the multiple pieces of equipment would be operational at the same time during the construction of projects under the 2020 LRDP Update. Table 3.11-14 shows estimated noise levels from a variety of construction activities that could occur for a typical project (and

assuming typical equipment usage) under the 2020 LRDP Update based on combined noise from up to three pieces of equipment that are typically used for each type of activity.

Table 3.11-14. Typical Construction Activity Noise Levels

Construction Activity ^a	Assumes the Following Equipment	Combined L _{max} at 100 Feet	Combined L _{eq} at 100 Feet
Demolition	Tractor, Concrete Saw, Excavator	85	79
Site Preparation	Excavator, Dump Truck, Backhoe	78	74
Grading	Dozer, Grader, Compactor	82	78
Building and Utilities	Crane, Forklift, Concrete Pump	81	76
Architectural Coating	2 Air Compressors	75	71
Paving	2 Pavers, Roller	77	72

Source: Federal Highway Administration 2006.

L_{max} = maximum sound level; L_{eq} = equivalent sound level.

^a Includes up to three pieces of typical equipment used for each type of activity.

As shown in Table 3.11-14, combined noise levels from construction activities at a distance of 100 feet could be in the range of approximately 71 to 79 dBA L_{eq}, depending on the construction phase and the equipment used. Note that most projects under the 2020 LRDP Update would not require the use of pile driving. However, if pile driving were to occur, construction noise levels could be even higher, with noise levels of 95 dBA L_{max} and 88 dBA L_{eq} at a distance of 100 feet from pile driving alone.

As a State entity, the University is exempt under the State constitution from compliance with local land use regulations, including general plans, zoning, and ordinances. However, the University seeks to develop its property in a manner that minimizes potential conflicts with the land use policies and plans of local jurisdictions to the extent feasible. The Sacramento Campus is in the city of Sacramento, and it useful for the University to utilize the local thresholds related to noise.

As described in the Section 3.11.2, *Regulatory Setting*, construction noise in Sacramento during the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday are exempt from the numerical standards for noise in the city of Sacramento, provided that the operation of an internal combustion engine is equipped with suitable exhaust and intake silencers in good working order. Therefore, during these daytime exempt hours, construction noise impacts from development under the 2020 LRDP Update would be less than significant. Outside of these exempt daytime hours, construction noise in the city is limited by the Exterior Noise Standards contained in the Sacramento City Code (55 dBA from 7:00 a.m. to 10:00 p.m. and 50 dBA from 10:00 p.m. to 7:00 a.m.). Therefore, outside of the daytime exempt hours, construction noise must be limited to 55 dBA between the hours of 6:00 p.m. and 10:00 p.m. and 50 dBA between the hours of 10:00 p.m. and 7:00 a.m.

Project construction would typically be limited to the daytime hours described above. However, some construction activities for future projects may occur outside of these specific daytime hours, when the Exterior Noise Standards described above would apply to construction noise. It is possible that some future projects would require construction activities to occur during the earlier hours of the morning (e.g., before 7:00 a.m. on weekdays and Saturdays or before 9:00 a.m. on Sundays) or after 6:00 p.m. For example, it is expected that concrete pours for future projects may need to occur

outside of the standard daytime hours for construction (in part because the temperature and humidity levels during nighttime hours are typically more appropriate for this activity than the temperature and humidity conditions during daytime hours). For these reasons, construction noise during non-exempt hours must be assessed more quantitatively.

The most common construction activity expected to occur during non-exempt hours for development under the 2020 LRDP Update would be concrete pours. Although most offsite residential land uses would be further than 50 feet from the construction areas for future LRDP projects, it is possible that some projects located near the campus perimeter could be as close as 50 feet from offsite receptors. Concrete pours could generate combined noise levels of 79 dBA L_{eq} at a distance of 50 feet. Refer to Table 3.11-15 for the combined noise levels of two concrete mixer trucks and a concrete pump truck at various distances.

Table 3.11-15. Example Nighttime Construction Noise LRDP Development – Concrete Pours

Source Data:	Maximum Sound Level (dBA)	Utilization Factor ^a	L_{eq} Sound Level (dBA)
Construction Condition: Nighttime Concrete Pour Example			
Concrete mixer truck – Sound level (dBA) at 50 feet =	79	40%	75.0
Concrete mixer truck – Sound level (dBA) at 50 feet =	79	40%	75.0
Concrete pump truck – Sound level (dBA) at 50 feet =	81	20%	74.0
Calculated Data			
Sources Combined – L_{max} sound level (dBA) at 50 feet =			85 dBA L_{max}
Sources Combined – L_{eq} sound level (dBA) at 50 feet =			79 dBA L_{eq}
Distance Between Source and Receiver (feet)	Geometric Attenuation (dB) ^b	Calculated L_{max} Sound Level (dBA)	Calculated L_{eq} Sound Level (dBA) ^c
25	6	91	86
50	0	85	79
100	-6	79	73
200	-12	73	67
300	-16	69	64
400	-18	66	61
500	-20	65	59
600	-22	63	58

dBA = A-weighted decibels; L_{max} = maximum sound level; L_{eq} = equivalent sound level.

^aThe utilization factor, or acoustical use factor, is the percentage of time each piece of construction equipment is assumed to be operating at full power (i.e., its noisiest condition) during construction; it is used to estimate L_{eq} values from L_{max} values.

^bGeometric attenuation based on 6 dB per doubling of distance, using 50 feet as the baseline distance (e.g., at 25 feet, combined noise would be 6 dB louder than it would be at 50 feet).

^cThis calculation does not include the effects, if any, of local shielding from walls, topography, or other barriers, which may reduce sound levels further.

Should more intensive construction activities, such as those that typically occur during daytime hours, take place earlier than 7:00 a.m. weekdays and Saturdays or 9:00 a.m. Sundays, or after 6:00 p.m. any day, noise levels may be greater than these cited levels. For example, construction noise from site preparation activities using an excavator, dump truck and backhoe (as shown in

Table 3.11.14 at a 100-foot distance) could generate noise of up to 80 dBA L_{eq} at 50 feet. Therefore, and since specific details about which construction activities for future projects may occur outside of exempt hours is not available, it is possible noise levels at the nearest noise-sensitive receptors could be in excess of the City's allowable 55 dBA noise level from 6:00 p.m. to 10:00 p.m. and 50 dBA noise level from 10:00 p.m. to 7:00 a.m.

Not all projects developed under the 2020 LRDP Update would require construction activities outside of these standard daytime hours. In addition, construction work that must occur outside of the standard daytime hours (as defined by the Sacramento City Code) for future LRDP projects may occur far enough away from noise-sensitive land uses to result in noise levels below allowable levels. However, it is possible that future projects would require construction work outside of the standard typical hours defined by the Sacramento City Code, and that noise-sensitive land uses may be exposed to noise levels in excess of the 55 dBA standard during the hours of 7:00 a.m. to 10:00 p.m. and the 50 dBA standard during the hours of 10:00 p.m. to 7:00 a.m. Construction noise impacts from the 2020 LRDP Update would be considered significant and mitigation would be required.

Implementation of Mitigation Measure LRDP-NOI-1 would reduce construction exposure to noise-sensitive land uses and would therefore reduce the severity of construction noise impacts. However, and as was the case for the 2010 LRDP, some future development under the 2020 LRDP Update may not be able to reduce construction noise sufficiently to eliminate the potential for impacts to occur. Therefore, construction noise impacts would be **significant and unavoidable**.

Mitigation Measure LRDP-NOI-1: Implementation of Measures to Reduce Construction Noise

For construction activities associated with future projects under the 2020 LRDP Update, UC Davis will implement or incorporate the following noise reduction measures into construction specifications for contractor(s) implementation during project construction:

1. Construction activities will be limited to the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday, when feasible.
2. Pile driving will not occur outside of the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday.
3. All construction equipment used for future projects will be equipped with suitable exhaust and intake silencers in good working order. All construction equipment will be properly maintained and equipped with intake silencers and exhaust mufflers and/or engine shrouds, in accordance with manufacturer recommendations. Equipment engine shrouds, if used, will be closed during equipment operation.
4. All construction equipment and equipment staging areas will be located as far as possible from nearby noise-sensitive land uses, and/or located such that existing or constructed noise attenuating features (e.g., temporary noise wall or blankets) block line of sight between affected noise-sensitive land uses and construction staging areas, to the extent feasible.
5. Individual operations and techniques will be replaced with quieter procedures (e.g., using welding instead of riveting, mixing concrete offsite instead of onsite) where feasible and consistent with building codes and other applicable laws and regulations.

6. Stationary noise sources such as generators or pumps will be located as far as feasible from noise-sensitive land uses.
7. No less than one week prior to the start of construction activities at a particular location, notification will be provided to academic, administrative, and residential or noise-sensitive uses (such as schools) located within 500 feet of the construction site.
8. For any construction activity that must extend beyond the daytime hours of 7:00 a.m. and 6:00 p.m. on weekdays and Saturdays, and between 9:00 a.m. and 6:00 p.m. on Sundays, the construction contractor for that project will ensure that noise levels at the nearest noise-sensitive land use do not exceed 55 dBA during the hours of 7:00 a.m. to 10:00 p.m. and 50 dBA during the hours of 10:00 p.m. to 7:00 a.m., as feasible. In addition to measures described above, the following measures may also help achieve this performance standard.
 - a. Install temporary noise barriers as close as possible to the noise source or the receptor and located within the direct line-of-sight path between the noise source and nearby sensitive receptor(s). The barrier should be constructed of material that has a surface weight of at least 1 pound per square foot and has an acoustical rating of at least 25 STC (Sound Transmission Class). This can include a temporary barrier constructed with plywood support on a wood frame, sound curtains supported on a frame, or other comparable material.
 - b. Use “quiet” gasoline-powered compressors or electrically powered compressors as well as electric rather than gasoline- or diesel-powered forklifts for small lifting, where feasible.
 - c. Prohibit idling of inactive construction equipment for prolonged periods (i.e., more than 2 minutes).
 - d. Retain a qualified noise specialist to conduct noise monitoring to ensure that noise reduction measures achieve the necessary reductions such that levels at the receiving land uses do not exceed 55 dBA during the hours of 7:00 a.m. to 10:00 p.m. and 50 dBA during the hours of 10:00 p.m. to 7:00 a.m.

Haul Truck Noise

In addition to noise generated by construction activity on the project site, noise is also generated by haul trucks traveling to and from project construction areas. Precise details about the number of haul trucks that may occur on a given day for overlapping future development projects under the 2020 LRDP Update are not known with certainty at this time. However, specific details related to haul truck trips are available for the Aggie Square Phase I project, which is analyzed in Volume 2 of this Supplemental EIR. Construction haul truck information from the Aggie Square Phase I analysis can be used to conduct a programmatic assessment of potential haul truck noise for development under the 2020 LRDP Update overall.

Detailed construction information was provided for this project by Wexford, including the number of total haul truck trips expected for the Aggie Square Phase I project by construction phase. As discussed in the *Methods for Analysis* section, to provide a reasonably conservative analysis of haul truck noise, this analysis assumes 40 percent of the LRDP development (e.g., double the size of Aggie Square Phase I, or approximately 2,769,000 square feet of development) could be occurring concurrently, and all concurrent phases of all concurrent development projects would require haul trucks.

Based on the Aggie Square Phase I haul truck and construction schedule information, it is expected that during the time period with the most overlapping phases of construction (which, for Aggie Square Phase I, was determined to be November of 2021), up to 88 daily haul truck trips would occur. Note that on most days of Aggie Square Phase I construction, there would be fewer than 88 total daily haul truck trips. However, modeling based on the period with the most overlapping construction phases provides a more conservative assessment.

As described in the *Methods for Analysis* section, this analysis assumes there could be up to 176 total haul truck trips per day entering or exiting the Sacramento Campus during construction related to implementation of the 2020 LRDP Update as a reasonable worst case, and that approximately one-third of the average daily truck trips would occur during a reasonable worst-case hour. To provide a more conservative analysis, it is also assumed that up to two-thirds of the hourly truck trips could be utilizing the same roadway segments. This would result in up to approximately one-fifth of daily haul trucks using a given roadway segment during a reasonable worst-case hour.

Baseline (2019) average peak hour noise was modeled to determine existing noise along roadway segments in the vicinity of the campus. Baseline (2019) conditions plus Haul Truck Trip modeling was then conducted to determine the noise increase along these roadway segments that could be attributable to construction haul truck noise. Refer to Table 3.11-16 for the results of the haul truck noise analysis.

Table 3.11-16. Construction Haul Truck Noise Increases

Roadway	Segment	Baseline (2019) Average Peak Hour Noise Levels	Baseline (2019) + Haul Truck Trip Average Peak Hour Noise Levels	Increase Attributable to LRDP Haul Trucks	Increase over 3 dB?
Stockton Boulevard	T Street to 39th Street/ Miller Way	67.1	68.4	1.3	No
Stockton Boulevard	39th Street/Miller Way to X Street	68.1	69.2	1.0	No
Stockton Boulevard	X Street to 2nd Avenue	66.8	68.2	1.3	No
Stockton Boulevard	2nd Avenue to Broadway	67.9	69.1	1.2	No
Stockton Boulevard	South of Broadway	68.5	69.6	1.1	No
Broadway	West of Stockton Boulevard	67.5	68.8	1.3	No
Broadway	Stockton Boulevard to 49th Street	65.1	67.0	1.9	No
Broadway	49th Street to 50th Street	63.9	66.2	2.4	No
Broadway	50th Street to 59th Street	64.9	66.8	2.0	No
Broadway	East of 59th Street	64.5	66.6	2.1	No

dB = decibels.

As shown in Table 3.11-16, construction haul truck trips would not be expected to result in a greater than 3 dB (considered barely audible) increase along any roadway segment in the campus vicinity based on the reasonably conservative assumptions outlined above. Therefore, development under the 2020 LRDP Update would not be expected to result in significant increases in ambient noise as a

result of construction haul truck activity. Noise from construction haul truck activity would be **less than significant**.

The 2010 LRDP Final EIR also concluded that the impact related construction noise impacts would be significant and unavoidable. Therefore, the 2020 LRDP Update would not result in a new or more severe construction impact than previously disclosed in the 2010 LRDP Final EIR.

Impact LRDP-NOI-2: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from operations in excess of applicable standards

Operational noise sources resulting from the implementation of the 2020 LRDP Update would include mechanical equipment at the Central Energy Plant, heating and cooling equipment at some individual future buildings, emergency generator testing (at the Central Energy Plant, and elsewhere), operational loading activities, and events at the campus (which can include amplified music or speech). Since precise details about the makes, models and sizes of all equipment to be installed for future projects is not known at this time, and since proposed design features that may attenuate noise (e.g., enclosures or the incorporation of mufflers) is also unknown, noise from emergency generators testing and from mechanical equipment for future development under the 2020 LRDP Update could result in significant noise impacts, and mitigation would be required. With implementation of Mitigation Measures LRDP-NOI-2a and LRDP-NOI-2b, impacts from generator testing and from future mechanical equipment would be reduced to less-than-significant levels. Project traffic noise impacts would be less than significant, with a no more than 0.7 dB increase resulting from project implementation on any analyzed segment.

Emergency helicopter operations would increase as a result of the implementation of the 2020 LRDP Update, and this increase would result in more individual homes being located within the 65 CNEL contour for helicopter noise and in one additional helicopter landing and takeoff cycle per day (and therefore an additional occurrence of potential sleep disturbance per night). Since no mitigation is available to reduce noise from emergency helicopter operations, this impact would be **significant and unavoidable** for emergency helicopter noise.

Traffic Noise

To determine whether development under the 2020 LRDP Update would result in a substantial permanent increase in traffic noise levels, noise from the increased vehicle traffic that could be generated under the 2020 LRDP Update was analyzed using traffic data received by the project's traffic engineer (Hananouchi pers. comm.). Vehicular traffic noise in the campus vicinity was modeled by using ADT traffic volumes along roadway segments and vehicle mix assumptions (i.e., the proportion of heavy vehicles on a given segment) provided by the project traffic engineer. ADT volumes were provided for Baseline (2019), Interim Implementation of 2020 LRDP Update (2030), 2040 No Project, Full Implementation of 2020 LRDP Update (2040) conditions.

Traffic-related noise was modeled for street segments in the campus vicinity to estimate potential 2020 LRDP Update-related noise increases that could occur at nearby noise-sensitive land uses. Table 3.11-17 shows 2020 LRDP Update-related traffic noise increases along roadway segments in the vicinity of the campus for 2040 conditions, the year of full implementation of the 2020 LRDP Update.

Table 3.11-17. 2020 LRDP Update-Related Traffic Noise Increases

Segment		Year 2040 No Project (dB L _{dn})	Year 2040 Full Implementation (dB L _{dn})	Project- Related Increase
Stockton Boulevard	T Street to 39th Street/Miller Way	70.9	71.1	0.2
Stockton Boulevard	39th Street/Miller Way to X Street	71.3	71.5	0.2
Stockton Boulevard	X Street to 2nd Avenue	69.6	70.0	0.4
Stockton Boulevard	2nd Avenue to 3rd Avenue	69.9	70.4	0.5
Stockton Boulevard	3rd Avenue to Broadway	70.1	70.8	0.7
Stockton Boulevard	South of Broadway	70.4	70.5	0.1
Broadway	West of Stockton Boulevard	70.0	70.2	0.2
Broadway	Stockton Boulevard to 49th Street	68.3	68.0	-0.3
Broadway	49th Street to 50th Street	66.4	66.7	0.3
Broadway	50th Street to 59th Street	68.6	68.4	-0.1
Broadway	East of 59th Street	68.1	68.0	-0.1
V Street	West of 49th Street	59.6	59.3	-0.3
V Street	East of 49th Street	61.6	61.8	0.2
50th Street	North of Broadway	65.7	65.1	-0.6
2nd Avenue	West of Stockton Boulevard	62.7	62.7	0.0
2nd Avenue	East of Stockton Boulevard	66.4	65.6	-0.7

dB L_{dn} = day night average level.

As shown in Table 3.11-17, the implementation of the 2020 LRDP Update would result in relatively minor noise increases (no more than 0.7 dB) or decreases (up to -0.7 dB) along all analyzed segments. Human sound perception, in general, is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, a change in sound level of 3 dB is just noticeable, and a change of 5 dB is clearly noticeable. Since all noise increases related to implementation of the 2020 LRDP Update were modeled to be below 1 dB, the project would not result in a 3 dB or greater increase in noise along any segment and would not result in any significant traffic noise impacts in the Sacramento Campus vicinity. Traffic noise impacts from implementation of the 2020 LRDP Update would be **less than significant**.

Central Energy Plant Heating and Cooling Equipment

The Sacramento Campus's Central Energy Plant provides normal and emergency electrical power, chilled and hot water for heating and cooling, and process steam to most campus buildings. Existing stationary sources of noise at the Central Energy Plant include five diesel emergency generators, five steam boilers and eight hot water boilers, one gas turbine, and four induced draft cooling towers. As shown in Table 3.11-10, average noise levels near the Central Energy Plant are between 54 dBA and 68 dBA L_{eq}.

Most new buildings constructed under the 2020 LRDP Update would rely upon the Central Energy Plant for heating and cooling. The Central Energy Plant is an enclosed building, and equipment noise is attenuated by the building walls. At present, the existing boilers and emergency generators exhaust to the roof of the Central Energy Plant, so some exterior noise from equipment operations is audible in the area.

The existing equipment at the Central Energy Plant would remain at the plant under implementation of the 2020 LRDP Update, and one new 2,000 chiller would be installed (Davis pers. comm. [a]). At present, there are three 1,948-ton centrifugal chillers, one 1,900-ton centrifugal chiller, three 1,330-ton absorption chillers, and one 950-ton absorption chiller. An individual chiller can generate noise levels of approximately 77 dBA at a distance of 25 feet (Hoover & Keith 2000). However, as demonstrated by the noise levels taken at the perimeter of the Central Energy Plant in 2010, mechanical equipment noise is substantially reduced because all equipment is inside the building.

In addition to these chillers, there are numerous pieces of noise-generating mechanical equipment (e.g., boilers, cooling towers). As shown in Table 3.11-10, most measurements taken near the plant were between 54 dBA L_{eq} and 59 dBA L_{eq} , demonstrating that noise from equipment within the building is greatly reduced by the building. The new chiller would be located inside the Central Energy Plant and would not require the installation of new exhaust or ventilations fans to the exterior of the Central Energy Plant Building. The addition of this single piece of heating and cooling equipment to the Central Energy Plant would not be expected to result in a perceptible increase in noise external to the building. Noise impacts from the addition of a chiller at the Central Energy Plant would be **less than significant**.

Emergency Generator Testing

A new 3,000 kilowatt (kW) generator would be installed at the Central Energy Plant under the 2020 LRDP Update (Davis pers. comm. [a]). It is expected that the generator would be installed external to the plant in a mechanical equipment yard. Note that five emergency generators are already housed in the plant. In addition to this new generator at the Central Energy Plant, a new 3,000 kW generator is also proposed under the 2020 LRDP Update at the Davis Tower in the north of the campus (near V Street). Note that six new generators (two 1,500 kW generators and four 1,000 kW generators) are also proposed at the Aggie Square Phase I project site, which is analyzed at the project-level in Volume 2 of this Supplemental EIR.

During emergency situations, generator noise is typically exempt from local noise regulations. However, noise resulting from the regular testing of emergency generators generally must comply with applicable noise standards. The exact make and model of the new 3,000 kW emergency generator at the Central Energy Plan has not been selected at this time, so sound data from a Cummins C3000 D6e 3,000 kW generator is used in this analysis (Cummins, Inc. 2017). Specific attenuation features that may be included with the generator, such as a sound enclosure and/or exhaust mufflers or silencers, have also not been selected at this time. Based on the Cummins C3000 D6e sound data, a 3,000-kW emergency generator could generate a noise level (including both engine and exhaust noise) of 100.1 dBA L_{eq} at 50 feet without the inclusion of any noise attenuating features.

Typically, campus generators (including the proposed Central Energy Plant generator) are tested for approximately 30 minutes at a time once per month. Noise during generator testing in the city of Sacramento must comply with the noise limits outlined in Section 8.68.060, *Exterior Noise Standards* of the Sacramento City Code. Although the University is exempt under the State constitution from compliance with local land use regulations, including general plans, zoning, and ordinances, the University typically elects to comply with local regulations. The exterior noise limit in the city between the hours of 7:00 a.m. and 10:00 p.m. is 55 dBA at the nearest residential or agricultural land use. The exterior noise limit between the hours of 10:00 p.m. and 7:00 a.m. is 50 dBA at the nearest residential or agricultural land use. Although the code also includes modifiers to allow more

noise if the duration of the noise is very short (e.g., between 1 and 15 minutes out of an hour), the standards cited above would apply to a 30-minute generator test.

The nearest residential land use to the proposed generator location is the Ronald McDonald House more than 750 feet from the proposed generator location. In addition, the Language Academy of Sacramento is more than 400 feet south of the proposed generator location (which, although not a residential use, is considered to be a sensitive land use for the purposes of this analysis). However, future onsite residential land uses are proposed for development with implementation of the 2020 LRDP Update northwest of the intersection of 48th Street and 2nd Avenue. This residential building could be located as close as 200 feet from this generator.

Based on the information cited above for a Cummins 3,000 kW emergency generator, a noise level of approximately 100 dBA L_{eq} from the generator at 50 feet (without the inclusion of any noise attenuating features) would be reduced to approximately 88 dBA at a distance of 200 feet (Cummins, Inc. 2017). Note that generator noise would be expected to be reduced by at least 5 dB as a result of the solid wall surrounding the equipment yard where the generator would be installed, resulting in an estimated 83 dBA noise level at a distance of 200 feet. Although noise would be reduced at a rate of 6 dB per doubling of distance, it's likely noise from generator testing would exceed the City's Exterior Noise Standards at receptors located even farther away (with noise in the range of 71 to 72 dBA at a distance of 750 feet). Additional attenuating features, such as a weather enclosure and/or exhaust silencers or filters could also reduce noise from generator operations, but specific attenuating features have not been selected at this time, therefore, noise from generator testing of the generator at the Central Energy Plant could result in noise levels in excess of the Sacramento City Code standards at nearby noise-sensitive land uses.

The generator at the Davis Tower could be as close as approximately 100 feet from the nearest residences (north of V Street). It would be located in a mechanical equipment yard surrounded by a solid wall. Based on the information cited above for a Cummins 3,000 kW generator, noise at a distance of 100 feet from this generator would be approximately 89 dBA when accounting for 5 dB of noise reduction from the solid wall around the mechanical equipment yard (Cummins, Inc. 2017). As with the Central Energy Plant Generator, additional attenuating features (e.g., weather enclosure and/or exhaust silencers or filters) could be included that would further reduce this noise level. However, specific attenuating features have not been selected at this time. Therefore, noise from generator testing from the generator at the Davis Tower could result in noise levels in excess of the Sacramento City Code standards at nearby noise-sensitive land uses.

In addition, future projects under the 2020 LRDP Update would include the installation and subsequent testing of emergency generators. Specifically, six new generators (two 1,500 kW generators and four 1,000 kW generators) are proposed at the Aggie Square Phase I project site. Although these are analyzed at the project-level in Volume 2 of this Supplemental EIR, these generators could also result in noise levels that exceed the applicable City of Sacramento noise limits during the testing. As described previously, generator testing for emergency generators installed under the 2020 LRDP Update would be temporary and intermittent, occurring for a period of 30 minutes at a time approximately once per month. However, because noise from the testing would be expected to exceed the quantitative criteria from the Sacramento City Code, impacts are conservatively considered to be significant, and mitigation is required.

Implementation of Mitigation Measure LRDP-NOI-2a would require that emergency generators installed as a result of implementation of the 2020 LRDP Update are oriented, located, and

designed in such a way to reduces noise exposure during testing to below the applicable City of Sacramento criteria. Therefore, with implementation of mitigation, emergency generator noise would comply with acceptable noise standards for sensitive receptors. This impact would be **less than significant with mitigation**.

Mitigation Measure LRDP-NOI-2a: Reduce Noise Exposure from Emergency Generators

Prior to approval of a building permit for individual LRDP development projects proposing the installation of emergency generators, documentation will be submitted to the University demonstrating with reasonable certainty that noise from testing of the proposed generator(s) would not exceed 55 dBA at the nearest residential land use. Acoustical treatments to reduce noise from generator testing may include, but are not limited to, the following.

- Enclosing generator(s)
- Incorporating the use of exhaust mufflers or silencers to reduce exhaust noise
- Selecting a relatively quiet generator model
- Orienting or shielding generator(s) to protect noise-sensitive receptors to the greatest extent feasible
- Increasing the distance between generator(s) and noise-sensitive receptors
- Placing barriers or enclosures around generator(s) to facilitate the attenuation of noise.

In addition, all project generator(s) will be tested only between the hours of 7:00 a.m. and 10:00 p.m.

The University will ensure that all recommendations from the acoustical analysis necessary to ensure that generator noise would meet the above requirements will be incorporated into the building design and operations.

Non-Central Energy Plant Operational Noise

Although most projects would rely upon the Campus Central Energy Plant for heating and cooling, some private public partnership facilities (On-Campus Partner Buildings) would also be developed on the campus. The main On-Campus Partner Buildings developed under the 2020 LRDP Update would be the Aggie Square Phase I and Aggie Square Phase II projects. Future On-Campus Partner Buildings developed under the 2020 LRDP Update may be served by building-specific heating and cooling equipment, such as packaged HVAC and/or air handling units, chillers and pumps. For these reasons, potential noise impacts from building-specific heating and cooling equipment for future LRDP development projects must be assessed.

A packaged air handling unit can produce sound levels in the range of about 70 to 75 dBA at 50 feet, depending on the size of the equipment (Hoover and Keith 2000). A large exhaust or ventilation fan can generate noise in the range of 79 dBA at 50 feet. Depending on the cooling capacity, a chiller can generate a noise level of approximately 65 to 71 dBA at 50 feet. Other mechanical equipment that may be used for future projects would generate similar noise levels.

In order to not exceed applicable thresholds, mechanical equipment must not result in noise levels of greater than 50 dBA L_{eq} at nearby noise-sensitive receptors during nighttime hours and 55 dBA

L_{eq} at noise-sensitive receptors during daytime hours. Since heating and cooling equipment may, at times, be operational 24 hours per day, the more stringent nighttime threshold is applied.

Noise from equipment located in mechanical equipment rooms is typically attenuated by the room itself, and noise levels audible outside such a room are often much less than the noise level inside the room. Mechanical equipment that is not located in an equipment room (e.g., rooftop equipment) is often shielded with a solid wall or screen which can result in slight reductions in noise. At this time, it is not known if all heating and equipment for future development under the 2020 LRDP Update (specifically, On-Campus Partner Buildings) would be fully enclosed, or shielded with a solid wall or screen at least as tall as the equipment. In addition, precise locations of the equipment have not been selected at this time. It is possible that equipment could be located within 65 feet of nearby existing or future residential land uses based on estimated distances between the residential building for Aggie Square Phase II and the nearest nonresidential Aggie Square building.

As cited above, mechanical equipment that may be installed at the site could generate noise levels of in the range of about 70 to 79 dBA at 50 feet, depending on the size of the equipment (Hoover and Keith 2000). At a distance of 65 feet, individual equipment noise levels would be in the range of 68 to 77 dBA. Noise could be reduced somewhat by a solid screen, and would be reduced even more should the equipment be placed in a mechanical equipment room. However, it is possible that noise levels from equipment would exceed 50 dBA L_{eq} during nighttime hours and 55 dBA L_{eq} during daytime hours at these future, or potentially offsite existing, noise-sensitive receptors.

Based on the information cited above, and because onsite residences affiliated with Aggie Square may be located relatively close to the heating and cooling equipment for Aggie Square Phase I, it is possible that heating and cooling equipment for future development under the 2020 LRDP Update (specifically, On-Campus Partner Buildings that include their own mechanical heating and cooling equipment) could result in noise levels in excess of noise standards. Noise from mechanical equipment for future projects under the 2020 LRDP Update not related to the Central Energy Plant would be considered significant, and mitigation is required.

Implementation of Mitigation Measure LRDP-NOI-2b would require that all stationary noise sources are oriented, located, and designed in such a way that reduces noise exposure to below the City's noise criteria. Therefore, impacts related to mechanical equipment noise outside of the Central Energy Plant would be **less than significant with mitigation**.

Mitigation Measure LRDP-NOI-2b: Reduce Noise Exposure from New Stationary Noise Sources

During project design of individual projects proposed under the 2020 LRDP Update, UC Davis will review and ensure that noise-generating equipment, including heating and cooling equipment and exhaust fans, would not result in noise levels in excess of 50 dBA L_{eq} at the nearest residential land use. The project design will incorporate features to reduce equipment noise, as necessary, to ensure the 50 dB L_{eq} at nearby residential land uses is not exceeded. Design features that may be implemented to reduce noise include, but are not limited to: locating equipment within equipment rooms or enclosures that incorporate noise reduction features, such as acoustical louvers; incorporating exhaust and intake silencers, as applicable; or selecting quieter equipment. Should noise levels potentially exceed 50 dBA at the nearest residential land use, UC Davis may require the completion and implementation of a detailed noise control analysis (by a person qualified in acoustical analysis and/or engineering) that

includes the incorporation of noise reduction measures (including quieter equipment, construction of barriers or enclosures, etc.) prior to the issuance of building permits.

Loading Activity Noise

Some new loading areas would be developed on the campus as a result of implementation of the 2020 LRDP Update. The new loading areas would generally be affiliated with new campus buildings constructed under the 2020 LRDP Update. In addition, some existing loading areas may have slight increases in daily deliveries resulting from the implementation of the 2020 LRDP Update.

The primary vehicles accessing project loading areas are medium-sized (e.g., Fed Ex, UPS) trucks and delivery vans (e.g., Amazon vans), although some larger or semi-trucks also load or unload at the campus. Loading can generate noise from the actual process of loading and unloading of vehicles or trucks (noting that smaller vans and medium size trucks typically result in less loading and unloading noise), from vehicle idling, and from backup alarms. Although backup alarms can be a source of annoyance, and although loading activities do generate noise, commercial loading would typically occur during daytime hours and would be at least 100 feet (and usually much more) from the nearest off-campus noise-sensitive receptors. This estimated worst-case distance is based on preliminary site plans and the existence of a landscaped buffer at least 40-feet wide around the edges of the campus closest to residences.

In general, the loading and unloading of goods is a common occurrence in cities and urban environments. The campus is in an urban environment near major thoroughfares (e.g., Stockton Boulevard and Broadway) and close to the US 50 freeway. Modeled existing noise levels due to traffic activity alone along Stockton Boulevard were in the range of 68 and 70 dBA L_{dn} , and modeled existing traffic noise levels along Broadway were in the range of 66 and 69 dBA L_{dn} (refer to Table 3.11-11). In addition, some of the loading activity for the campus currently takes place, and would continue to take place, at loading docks located either internal to buildings (e.g., in the lower or basement level of campus buildings) or in loading yards that have shielding features incorporated (such as building orientation or walls) that help reduce loading noise.

Because the campus is in an urban area with elevated existing noise levels, because loading activities are temporary, intermittent, and occur primarily during daytime hours, and because loading activities resulting from 2020 LRDP Update implementation would be located an estimated 100 feet or more (and usually farther) from offsite noise-sensitive land uses, noise impacts from intermittent loading activities for future projects under the 2020 LRDP Update would be **less than significant**.

Amplified Music and Sound

Although most of the campus area would not be expected to have large gatherings or events, the Aggie Square Phase I area of the campus would potentially have weekly and monthly gatherings. Gatherings could be small or large and could include amplified music or speech. Specifically, UC Davis estimates that there could be up to 1 event per week on weekday afternoons in Aggie Square outdoor uses areas with up to 150 people. In addition, there is expected to be up to 1 larger monthly event with a maximum of 1,800 people in attendance. Weekday (Sunday through Thursday) events involving amplified music would not begin before 4:50 p.m. (after the typical school day is over) and would not extend past 10:00 p.m. Weekend (Friday and Saturday, and the day before certain holidays) events will not extend past 11:00 p.m. (Davis pers. comm. [a]).

According to the Sacramento City Code, Section 8.68.160, Outdoor recreational activities, “It is unlawful for any person to conduct . . . entertainment events and concerts at which amplified noise, amplified music, or amplified sound that exceeds 96 dBA L_{eq} during the months of September and October or 98 dBA L_{eq} during the months of November through August,” as measured at the sound booth or other reasonable location not more than 150 feet from the noise source. In addition, the following time limits apply to amplified speech or music from such events.

1. Sunday through Thursday. Except as provided in subsection (B)(2) of this section, the amplified sound associated with the outdoor activities described in subsection A of this section shall commence not earlier than nine a.m. and shall be terminated no later than ten p.m. on Sunday, Monday, Tuesday, Wednesday and Thursday.
2. Friday, Saturday and the Day Before Specified Holidays. The amplified sound associated with the outdoor activities described in subsection A of this section shall commence not earlier than nine a.m. and shall be terminated no later than eleven p.m. on Friday, Saturday and the day before the specified holidays listed below. (Sacramento City Code Section 8.68.160)

Noise levels from smaller events where amplified speech would occur would be generally lower than noise levels from amplified live or recorded music. For example, noise from human speech being amplified by a single loud speaker has been measured in the range of approximately 56 to 58 dBA L_{eq} at 100 feet,¹ whereas noise from a small live band, which included a guitar and vocalists, with a single amplifier has been measured to be approximately 65 dBA L_{eq} at 100 feet.² Larger concert-type events could generate higher noise levels.

Noise measurements were obtained from a previous study involving an outdoor live music venue.³ A blues band with full amplification performed at the venue; it is anticipated that this would be representative of the louder events that may occur at Aggie Square. Noise levels were measured at 200 feet from the front of the center of the stage during the live performance and found to be approximately 79.1 dBA L_{eq} . This equates to approximately 85 dBA at 100 feet or 82 dBA at 150 feet.

As described above, noise from amplified music and speech occurring at entertainment events or concerts is limited per the Sacramento City Code to approximately 96 dBA (depending on the season) at a distance of 150 feet. The estimated noise levels from the concert example cited above (82 dBA at 150 feet) demonstrate that it is unlikely for noise from amplified music on the campus to exceed the allowable level of 96 dBA at a distance of 150 feet. In addition, events with amplified music would abide by the time limits outlined in the Sacramento City Code. Weekday (Sunday through Thursday) events involving amplified music would not extend past 10:00 p.m., and weekend (Friday and Saturday, and the day before certain holidays) events would not extend past 11:00 p.m. For these reasons, noise impacts from amplified music for events within the plan area would be **less than significant**.

¹ Wedding Noise: Noise measured at approximately 140 feet from an individual officiating over a wedding (single speaker) was measured to be between approximately 55 and 56 dBA L_{eq} , equating to a noise level of 58 to 59 dBA L_{eq} at 100 feet.

² Acoustic Band Noise: Noise measured at approximately 73 feet from a small live band with a single amplifier that included a guitar and vocals was measured to be 67.5 dBA L_{eq} , equating to 64.8 dBA L_{eq} at 100 feet.

³ Measurements were obtained at the Irvine Regional Park Amphitheater which has a permanent band shell for live music or entertainment.

Emergency Helicopter Noise

A discussion of noise produced by emergency helicopter operations under 2025 conditions is provided below in terms of two metrics: CNEL and SEL. Under California Division of Aeronautics and FAA noise compatibility criterion, single- or multi-family residences are considered compatible with exterior aircraft noise exposures of 65 dB CNEL or less. If helicopter noise exposes residents to exterior aircraft noise levels in excess of 65 dB CNEL, the impact is considered significant. This criterion for helicopter operation noise is consistent with the criteria established by the FAA, Caltrans Division of Aeronautics, and the Environmental Constraints element of the *Sacramento 2035 General Plan*.

SEL is a measure of total acoustical energy associated with a single aircraft overflight. SEL values due to helicopter landings or departures of 95 dBA or greater are used in the discussion below to describe the probability of sleep disturbance by a single helicopter event.

Information related to helicopter landing and takeoff noise was presented in the 2010 LRDP Final EIR. Figures 3.11-1 and 3.11-2 demonstrate that the approach and departure of the B0105 and A109 helicopters can be expected to result in SEL values in excess of 95 dBA at hospital patient rooms on campus, the Shriners Hospital, and immediately at residences north of V Street. The figures also show that the approach and departure of the BK117 helicopters can be expected to result in SELs in excess of 95 dBA at hospital patient rooms on campus and in the Shriners Hospital. The hotel rooms in the Courtyard Marriott Hotel would be outside of 95 dBA SEL contours for selected helicopters. Based on this, it is expected that uses in these areas may experience periodic annoyance or sleep disturbance from helicopter noise. The expected increase in helicopter landing and takeoff cycles from 1,127 in 2019 to 1,541 in 2040 equates to an increase from 3.1 landing and takeoff cycles a day on average in 2019 to 4.2 operations a day on average in 2040.

Figure 3.11-3, CNEL Helicopter Noise Levels, shows the projected 65 CNEL helicopter noise contours under various conditions including 2040.

Figure 3.11-3 indicates that the projected growth in helicopter operations will expand the 65 CNEL contour to include residences north of the campus. Given that more residences may be located within the 65 CNEL contour, and because there is projected to be approximately 1 additional helicopter landing and takeoff cycle per day over existing conditions with full implementation of the 2020 LRDP Update that could result in sleep disturbance, the impact of increased helicopter operations would be significant.

The requirements of Section 21662.4(a) of the State Aeronautics Act titled “Emergency Flights for Medical Purposes” preclude feasible options for modifying helicopter operations to mitigate this significant impact. This section of the act states:

Emergency aircraft flights for medical purposes by law enforcement, firefighting, military, or other persons who provide emergency flights for medical purposes are exempt from local ordinances adopted by a city, county, or city and county, whether general law or chartered, that restrict flight departures and arrivals to particular hours of the day or night, that restrict the departure or arrival of aircraft based upon the aircraft’s noise level, or that restrict the operation of certain types of aircraft.

Because there are no feasible mitigation options to reduce the significant impact related to emergency helicopter operations, this impact would be **significant and unavoidable**.

The 2010 LRDP Final EIR also concluded that the impact related to traffic noise would be less than significant, and impacts related to operational noise would be less than significant with mitigation. Besides helicopter noise, these impact determinations are the same as those for the 2020 LRDP Update. Therefore, the 2020 LRDP Update would not result in a new or more severe impact related to traffic or stationary sources of operational noise than previously disclosed in the 2010 LRDP Final EIR. However, the 2010 LRDP Final EIR concluded that noise from helicopter operations would be less than significant. The discussion above indicates that noise associated with helicopter trips would be significant and unavoidable under the 2020 LRDP Update. Therefore, the 2020 LRDP Update would result in a new or more severe impact related to emergency helicopter activity than previously disclosed in the 2010 LRDP Final EIR.

Impact LRDP-NOI-3: Generation of excessive groundborne vibration or groundborne noise levels

Construction activities for future projects under the 2020 LRDP Update would have the potential to generate groundborne vibration. Vibration resulting from LRDP construction would have the potential to result in annoyance effects on primarily onsite and offsite uses, even though offsite uses would all be at least 50 feet or more from onsite construction areas. Conservatively it was determined that annoyance-related vibration impacts on onsite and offsite land uses would be significant, and mitigation is required. With implementation of Mitigation Measure LRDP-NOI-3a, this impact would be reduced to a less-than-significant level. There is also the potential that vibration could occur close enough to on-campus buildings to result in potential damage-related effects. Damage-related vibration impacts are determined to be significant, and mitigation is required. With implementation of Mitigation Measure LRDP-NOI-3b, damage-related vibration impacts on campus structures would be reduced to less than significant levels. Vibration impacts would be **less than significant with mitigation**.

Policy EC 3.1.5 of the *Sacramento 2035 General Plan* states that the City requires construction projects anticipated to generate a significant amount of vibration to ensure acceptable interior vibration levels at nearby residential and commercial uses based on the current City or FTA criteria (City of Sacramento 2015). Sensitive receptors in the project area include onsite hospital, research and some commercial uses, as well as limited onsite and primarily offsite residential land uses. Construction activity is a main cause of vibration effects, and the two main concerns associated with construction-generated vibration are annoyance (and specifically, sleep disturbance) and potential structural damage.

Vibration-Related Annoyance – Daytime Hours

As described in Section 3.11.1, *Regulatory Setting*, FTA provides guidance on evaluating effects of vibration levels on humans from various vibration-inducing events, including construction activities and vibration from railroads. The impact criteria, which are based on the frequency of events occurring in 1 day and on receptor categories (such as buildings where vibration would interfere with interior operations, residences/buildings where people sleep, and institutional land uses with primarily daytime use), are summarized in Table 3.11-3.

The potential for annoyance-related vibration impacts from construction to occur depends on the proximity of construction activities to sensitive receptors, the number and types of construction equipment, the duration of construction equipment use, and the time of use. At least some future development projects under the 2020 LRDP Update may use pile drivers, and most development

projects would at least be expected to use heavy-duty equipment, such as a large bulldozer or vibratory roller. Typical vibration levels associated with heavy-duty construction equipment are shown in Table 3.11-18 at a reference distance of 25 feet and other distances, based on the attenuation equation discussed above in Section 3.11.1, *Overview of Vibration and Groundborne Noise*.

Table 3.11-18. Vibration Levels in VdB of Construction Equipment Used for 2020 LRDP Update Development

Equipment	VdB at 25 feet	VdB at 50 feet	VdB at 75 feet	VdB at 100 feet	VdB at 150 feet	VdB at 200 feet
Pile driver (impact) – Typical	104	95	90	86	81	77
Pile driver (vibratory) – Typical	93	84	79	75	70	66
Vibratory Roller	94	85	80	76	71	67
Large bulldozer	87	78	73	69	64	60
Caisson drilling	87	78	73	69	64	60
Loaded trucks	86	77	72	68	63	59
Jackhammer	79	70	65	61	56	52
Small bulldozer	58	49	44	40	35	31

VdB = vibration decibels.

Most on-campus land uses in the vicinity of project construction areas would fall into the category of Category 3 land uses (i.e., offices, schools or buildings without vibration sensitive equipment and where people do not typically sleep). However, some existing and future land uses on or adjacent to the campus could be Category 2 land uses (i.e., places where people sleep). In addition, some Category 1 uses (buildings where vibration would interfere with interior operations), such as buildings with sensitive hospital or research equipment, are on the campus, and could be near construction areas.

Construction activity typically is considered to be a “frequent event” because it occurs throughout a given day (and often for an extended period of time), for which more stringent criteria apply than for occasional or infrequent events. As shown in Table 3.11-18, at a distance of 75 feet, vibration levels from most equipment (except for pile drivers and vibratory rollers) would result in vibration levels below the criteria of 75 VdB for Category 3 uses (such as offices or schools). For example, a large bulldozer, one of the most vibration-intensive pieces of non-impact equipment typically used for construction, would result in vibration levels below the Category 3 criteria of 75 VdB at a distance of 70 feet.

With regard to Category 1 land uses (places where vibration would interfere with interior operations), vibration levels from non-impact construction equipment could also exceed the Category 1 vibration criterion of 65 VdB at 140 feet. Although construction would often occur farther than these distances from onsite Category 1 land uses, construction activities for development as part of the 2020 LRDP Update could take place within this distance.

With regard to Category 2 uses (places where people sleep), vibration levels from typical non-impact equipment could exceed the Category 2 vibration criterion of 72 dBA at a distance of approximately 80 feet. However, note that annoyance-related vibration effects on Category 2 land uses are primarily a concern during nighttime hours, when people typically sleep. Most construction

for future projects under the 2020 LRDP Update would occur during the standard daytime hours for construction outlined in the Sacramento City Code, during which time vibration effects would result in less sleep disturbance.

In addition to non-impact equipment, it is possible that some future projects would require the use of pile drivers during construction. Pile driving can exceed the criterion for Category 3 land uses at 225 feet, for Category 2 uses at 300 feet (noting no nighttime pile driving would be allowed per Mitigation Measure LRDP-NOI-1), and for Category 1 uses at approximately 500 feet, resulting in larger potential annoyance-related vibration impacts than would occur with the use of non-impact equipment.

Since vibration levels resulting from construction could be in excess of the applicable criteria for land uses located on the project site, potential vibration-related annoyance impacts to onsite uses would be considered significant and mitigation would be required.

With regard to offsite noise sensitive land uses, the closest offsite land uses are primarily Category 2 (residences and buildings where people normally sleep) or Category 3 land uses (e.g., offices or school uses, etc.), with Category 2 uses considered to be more sensitive than Category 3 uses. The closest offsite Category 2 uses are located along V Street north of the campus. These land uses are at least 50 feet from 2020 LRDP Update construction areas, and much further from most future 2020 LRDP Update construction areas.

Annoyance-related vibration effects on Category 2 land uses are typically a concern if vibration levels in excess of applicable standards occur during nighttime hours when people sleep. Most construction for future projects under the 2020 LRDP Update would occur during the standard daytime hours for construction outlined in the Sacramento City Code. However, limited nighttime construction for individual future projects may be required.

Should nighttime construction be required, it would generally be limited to construction processes that involve limited ground disturbance, such as concrete pour activities. Concrete mixers and concrete pumps do not typically generate high levels of vibration. It is expected that the most vibration-intensive equipment types that may be used during nighttime hours would generate vibration levels similar to, or less than, that of a small bulldozer. As shown in Table 3.11-18, a small bulldozer would result in a vibration level of approximately 49 VdB at a distance of 50 feet (the distance to the nearest offsite residential land uses from potential campus construction areas).

Should construction activities involving the use of more vibration-generating equipment occur outside of the typical daytime hours, it is possible that it could affect Category 2 land uses near the project site. As mentioned previously, the closest offsite Category 2 land uses are located along V Street north of the campus at a distance of approximately 50 feet from the campus. Typical non-impact construction equipment (such as a large bulldozer) can result in vibration levels of up to 78 VdB at 50 feet. Other non-impact equipment would generate lower levels of vibration at this distance, with the exception of a vibratory roller, which could result vibration levels of 85 VdB at this distance. Note that the use of pile drivers is not proposed for construction near these Category 2 land uses.

As shown in Table 3.11-3, vibration levels should be limited to 72 VdB at Category 2 land uses, where people normally sleep. However, these more vibration-intensive activities would not be expected to occur during nighttime hours or near the perimeter of the campus, and would therefore not result in sleep disturbance. Nevertheless, since future hours of construction for each future

project are not defined at this time, it is possible that vibration-related annoyance affects at nearby off-campus residences could be significant. Therefore, potential vibration-related annoyance impacts to onsite and offsite land uses would be significant and mitigation would be required.

Implementation of Mitigation Measure LRDP-NOI-1 would ensure that pile driving would not occur outside of the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday, reducing the potential for nighttime vibration-related annoyance effects. Implementation of Mitigation Measure LRDP-NOI-3a calls for the construction contractor to coordinate the timing of the vibration-intensive activities with hospital or research units that may be affected to reduce potential vibration-related annoyance effects on sensitive onsite hospital or research receptors. This would reduce vibration related annoyance impacts on on-campus land uses to less-than-significant levels. Implementation of Mitigation Measure LRDP-NOI-3b ensures that equipment will not operate within 100 feet of on-campus or off-campus residential (Category 2) land uses during nighttime hours, such that vibration levels at the nearest Category 2 land use will not exceed the applicable vibration criteria of 72 VdB. Implementation of this mitigation measure would ensure that nighttime vibration-related annoyance effects on places where people sleep would be reduced. This impact would be **less than significant with mitigation**.

Mitigation Measure LRDP-NOI-3a: Implement Measures to Reduce Vibration-Related Annoyance Impacts to Onsite Land Uses

Should vibration-generating construction activities that do not involve pile driving be proposed within 140 feet of on-campus Category 1 buildings, or should pile driving activities be proposed within 500 feet of Category 1 land uses, the construction contractor will work with the University to identify vibration-producing activities on the construction schedule in advance. The construction contractor will coordinate the timing of the activities with hospital or research units that may be affected to reduce potential vibration-related annoyance effects on sensitive onsite hospital or research receptors. In addition, the construction contractor will appoint a project vibration coordinator who will serve as the point of contact for vibration-related complaints during project construction. Contact information for the project vibration coordinator will be posted at the project site and on a publicly available project website. The project vibration coordinator will be contacted should vibration effects become too disruptive at on-campus uses, and the project vibration coordinator will then work with the construction team to adjust activities to reduce vibration or to reschedule activities for a less sensitive time.

Mitigation Measure LRDP-NOI-3b: Implement Measures to Reduce Vibration-Related Annoyance Impacts to Offsite Land Uses

Should vibration-generating construction activities for future development under the 2020 LRDP Update (other than pile driving) be proposed outside of the daytime hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday, equipment must not operate within 100 feet of on-campus or off-campus residential (Category 2) land uses. Vibration levels at the nearest Category 2 land use will not exceed the applicable vibration criteria of 72 VdB. The contact information for the project vibration coordinator (described in Mitigation Measure LRDP-NOI-3a) will be posted at the project site and on a publicly available project website. Should residents in the project area submit complaints to the project vibration coordinator for nighttime construction vibration concerns, the construction

team will adjust activities to reduce vibration, or will reschedule activities for a less sensitive time such that vibration does not exceed 72 dB at nearby Category 2 land uses.

Vibration-Related Structural Damage

Policy EC 3.1.7 of the *Sacramento 2035 General Plan* states “The City shall require an assessment of the damage potential of vibration-induced construction activities, highways, and rail lines in close proximity to historic buildings and archaeological sites and require all feasible measures be implemented to ensure no damage would occur” (City of Sacramento 2015).

Construction of future projects under the 2020 LRDP Update would require equipment that could generate groundborne vibration. Typical vibration levels associated with heavy-duty construction equipment at a distance of 25 feet, and various other distances, are shown in Table 3.11-19.

Table 3.11-19. Peak Particle Velocity Vibration Levels for Construction Equipment

Equipment	PPV at 25 Feet	PPV at 50 Feet	PPV at 75 Feet	PPV at 100 Feet	PPV at 175 Feet
Pile driver (impact)	1.52	0.54	0.29	0.19	0.08
Pile driver (sonic)	0.73	0.26	0.14	0.09	0.04
Vibratory roller	0.09	0.03	0.02	0.01	0.00
Hoe ram	0.09	0.03	0.02	0.01	0.00
Drill	0.09	0.03	0.02	0.01	0.00
Large bulldozer	0.08	0.03	0.01	0.01	0.01
Loaded trucks	0.04	0.01	0.01	0.00	0.00
Jackhammer	0.21	0.07	0.04	0.03	0.01
Small bulldozer	0.00	0.00	0.00	0.00	0.00

Source: Federal Transit Administration 2018.

PPV = peak particle velocity.

As shown in Table 3.11-4, some building types (e.g., fragile buildings or historic and some old buildings) are more susceptible to vibration-related damage effects. Vibration impacts on structures are usually significant if construction vibration could result in structural or cosmetic damage or, in the case of a historic resource, materially alter the resource pursuant to CEQA Guidelines Section 15064.5. Depending on a structure’s condition, potential vibration-induced damage may be cosmetic (e.g., plaster or wood ornamentation may be damaged) or structural, in which case the integrity of the building may be threatened. Based on coordination with the University, the most sensitive category of buildings currently existing on the project site would fall into the “historic and some old buildings” category outlined in Table 3.11-4. In addition, most onsite structures would be most similar to “new residential structures,” or “modern industrial/commercial buildings.” “Older residential structures” potentially are located offsite.

This analysis conservatively assumes that construction could occur within 25 feet of the most sensitive onsite buildings (“historic and some old buildings”). Note that vibration-generating activities would likely occur farther than 25 feet from such buildings, and that most buildings on the campus would likely be less sensitive to potential vibration impacts than buildings of this category. However, as mentioned previously, this analysis utilizes these assumptions to ensure a conservative assessment.

Continuous/frequent intermittent sources of vibration (such as construction activity) that exceeds the 0.25 PPV would have the potential to cause damage to buildings in the “historic and some old buildings” category. Note that “older residential structures” are susceptible to potential damage-related effects with vibration levels in excess of 0.3 PPV and “new residential structures” and “modern industrial/commercial buildings” are potentially susceptible to damage at vibration levels of 0.5 PPV in/sec or higher.

As shown in Table 3.11-19, at 25 feet, all construction equipment besides vibratory and impact pile drivers would result in vibration levels below the damage thresholds for “historic and some old buildings.” The estimated vibration levels are also below the less stringent Caltrans vibration damage criteria for “older residential structures,” “new residential structures,” and “modern industrial/commercial buildings.” Therefore, vibration-related damage impacts from all equipment besides pile drivers on nearby on-campus buildings would be less than significant. Note that all offsite land uses would be farther than 50 feet (usually much farther) from the construction areas for future projects implemented as part of the 2020 LRDP Update, so this analysis also demonstrates that vibration-related damage effects on offsite land uses from construction equipment besides pile drivers would be less than significant.

Although most future projects would not require the use of pile driving, some projects may include the use of this equipment. At a distance of 100 feet, vibration levels from impact pile drivers would be below the vibration criteria for “historic and some old buildings,” “older residential structures,” “new residential structures,” and “modern industrial/commercial buildings.” However, it is possible that a risk of vibration-related damage impacts could be present should impact pile driving take place within 100 feet of structures in the “historic and some old buildings” category. In addition, should impact pile driving occur within 75 feet of buildings similar to “older residential structures,” and 55 feet of buildings in the “modern industrial/commercial buildings” category, there may also be a potential for vibration-related damage effects.

Since the exact distances between potential future pile driving activities and nearby on-campus or off-campus buildings are not known at this time, it is conservatively assumed that pile driving could take place close enough to existing buildings that potential damage-related impacts could occur. Specifically, if impact pile driving should occur within 100 feet of a building in the “historic and some old building” category, within 75 feet of “older residential structures,” and within 55 feet of “modern industrial/commercial buildings,” vibration-related damage effects could occur. Therefore, vibration-related damage impacts from potential pile driving activities under the 2020 LRDP Update conservatively would be **less than significant with mitigation**.

The 2010 LRDP Final EIR also concluded that construction vibration impacts would be less than significant with mitigation. Therefore, the 2020 LRDP Update would not result in a new or more severe construction vibration impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measure LRDP-NOI-3c: Protect Adjacent Potentially Susceptible Structures from Construction-Generated Vibration during Pile Driving

The construction contractor for development projects under the 2020 LRDP Update will consult with the University to determine whether adjacent or nearby buildings constitute structures that could be adversely affected by construction-generated vibration. For purposes of this measure, nearby potentially susceptible buildings within 100 feet of a construction site for a future development project will be considered if pile driving would be required at that site.

If buildings adjacent to construction activity are identified that could be adversely affected, the project sponsor will incorporate into construction specifications for the proposed project a requirement that the construction contractor(s) use all feasible means to avoid damage to adjacent and nearby buildings. Such methods to help reduce vibration-related damage effects may include maintaining a safe distance between the construction site and the potentially affected building (e.g., at least 100 feet for “historic and some old buildings”), or using “quiet” pile-driving technologies (such as predrilling piles or using sonic pile drivers).

Should pile driving be required within 100 feet of a building in the “historic or some old building” category, within 75 feet of buildings in the “older residential structures” category, and within 55 feet of buildings in the “modern industrial/commercial category,” the University will work with the construction contractor to implement a monitoring program to minimize damage to adjacent buildings and ensure that any such damage is documented and repaired. If required, the monitoring program will include the following components:

- Prior to the start of any ground-disturbing activity, the project sponsor will engage a historic architect or qualified historic preservation professional to undertake a preconstruction survey nearby affected buildings that may be considered historic. For buildings that are not potentially historic, a structural engineer or other professional with similar qualifications will document and photograph the existing conditions of potentially affected buildings within 100 feet of pile-driving activity.
- Based on the construction and condition of the resource(s), the consultant will also establish a standard maximum vibration level that will not be exceeded at any building, based on existing conditions, character-defining features, soil conditions, and anticipated construction practices (common standards are a peak particle velocity of 0.25 inch per second for “historic and some old buildings,” a peak particle velocity of 0.3 inch per second for “older residential structures,” and a peak particle velocity of 0.5 inch per second for “new residential structures” and “modern industrial/commercial buildings,” as shown in Table 3.11-4).
- To ensure that vibration levels do not exceed the established standard, the project sponsor will monitor vibration levels at each structure and prohibit vibratory construction activities that generate vibration levels in excess of the standard.
- Should vibration levels be observed in excess of the selected standard, construction will be halted and alternative construction techniques put in practice, to the extent feasible (e.g., predrilled piles could be substituted for driven piles, if feasible, based on soil conditions, or smaller, lighter equipment could be used in some cases).
- The historic preservation professional (for effects on historic buildings) and/or structural engineer (for effects on non-historic structures) will conduct regular periodic inspections (every 3 months) of each building during ground-disturbing activity on the project site. Should damage to any building occur, the building(s) will be remediated to their preconstruction condition at the conclusion of ground-disturbing activity on the site.

Impact LRDP-NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels

There are no public or public use airport facilities in the vicinity of the Sacramento Campus, and there would be no noise impacts related to aircraft activity at public airports. There are also no private airstrips within 2 miles of the campus, but there is an on-campus emergency helipad. Implementation of the 2020 LRDP Update would result in approximately one additional emergency helicopter landing and takeoff cycle per day at the on-campus helipad, which could result in increased sleep disturbance for nearby residences. In addition, this projected growth in helicopter operations is expected to expand the 65 CNEL contour to include residences north of the campus that are not included in this contour under existing conditions. This impact is therefore significant. There is no feasible mitigation to reduce this impact to a less-than-significant level. Therefore, this impact would be **significant and unavoidable**.

The nearest public use airport to the Sacramento Campus is the Executive Airport, which is approximately 2.5 miles southwest of the site. The Sacramento International Airport is approximately 11 miles northwest of the campus. There are no other public or public use airport facilities in the vicinity of the campus. There would be no noise impacts related to aircraft activity at public airports.

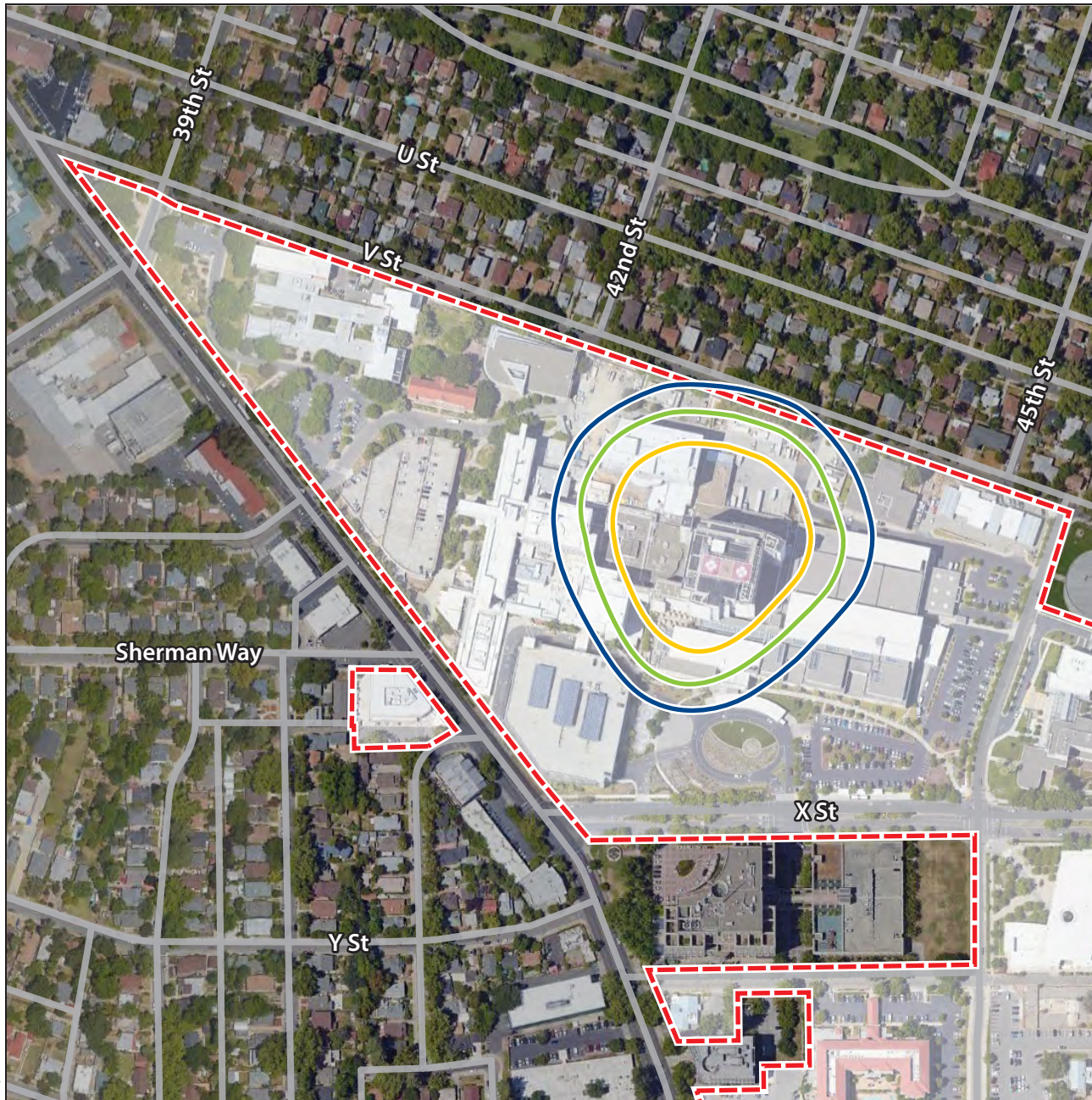
There are no private airstrips within 2 miles of the campus. However, an emergency helipad is on the campus on the 12-story Davis Tower. Although the University does not own or operate the helicopters (the helicopters come from several different agencies and private services), noise-sensitive receptors located both onsite and offsite are exposed to noise from the emergency helicopters that use this helipad. In 2019, approximately 1,127 helicopter landing and takeoff cycles occurred at this helipad, an average of 3.0 landing and takeoff cycles per day. With implementation of the 2020 LRDP Update, there would be an increase of approximately 1.2 landing and takeoff cycles per day by the year 2040.

Although emergency helicopter activity already occurs in this area, and implementation of the 2020 LRDP Update would result in only approximately 1 additional helicopter landing and takeoff cycle per day, the additional landing and takeoff could result in increased sleep disturbance in the project area. In addition, the projected growth in helicopter operations would expand the 65 CNEL contour to include residences north of the campus that are not included in this contour under existing conditions. Given that more residences may be included in the 65 CNEL contour, and because of the approximately 1 additional helicopter per day over existing conditions that could result in sleep disturbance, impacts related to the exposure of people residing or working in the project area to excessive noise levels from aircraft noise as a result of the implementation of the 2020 LRDP Update would be significant.

Because there are no feasible mitigation options to reduce the significant impact related to emergency helicopter operations, this impact would be **significant and unavoidable**.

The 2010 LRDP Final EIR found that noise impacts associated with helicopter takeoffs and landings were less than significant and did not address airport and landing strips because they were eliminated from consideration in the NOP. The analysis above finds that noise impacts from helicopter takeoff and landing would be significant and unavoidable. Therefore, the 2020 LRDP

Update would result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.



Legend

- UC Davis Campus Boundary
- 65 CNEL–2009–720 Annual Operations (2010 LRPD EIR)
- 65 CNEL–2019–1127 Annual Operations (extrapolated from 2009 contours)
- 65 CNEL–2025–948 Annual Operations (2010 LRPD EIR)

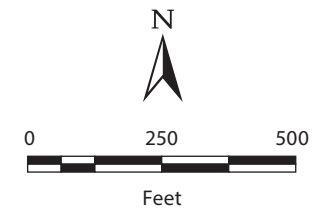


Image: Google Earth Pro, 2020

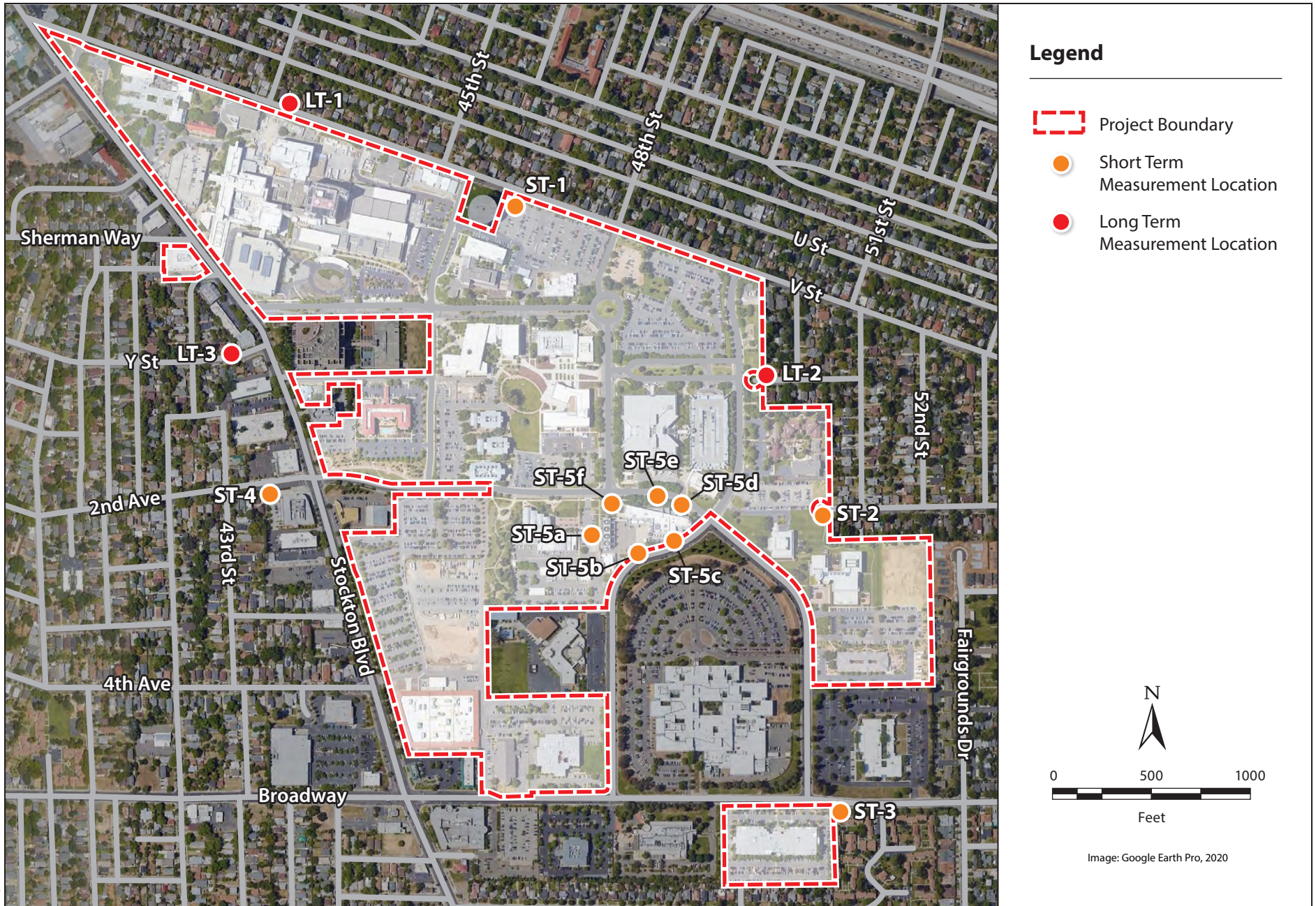
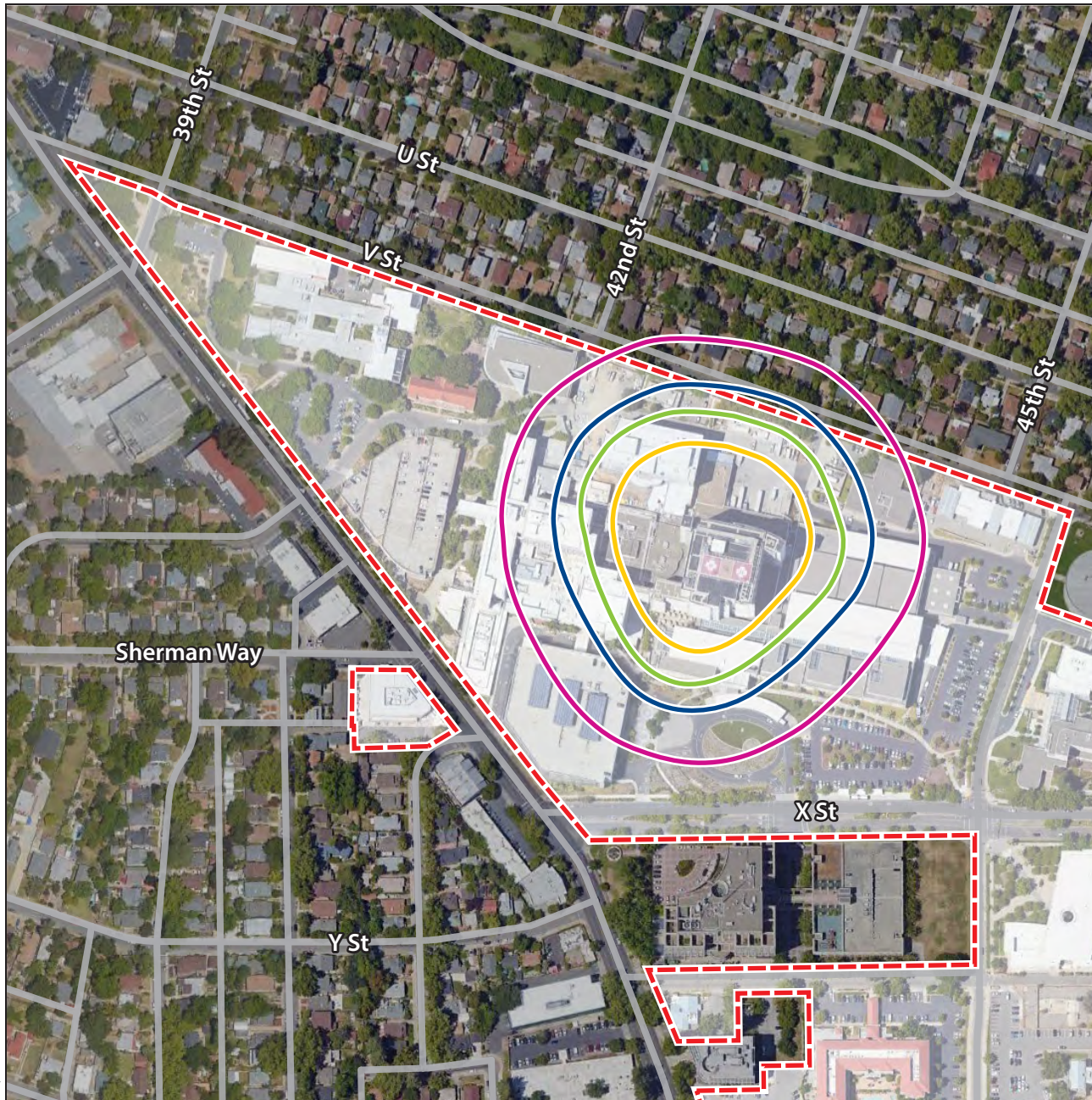


Figure 3.11-2
2010 LRDP FEIR Noise Measurement Locations



Legend

- UC Davis Campus Boundary
- 65 CNEL–2009–720 Annual Operations (2010 LRPD EIR)
- 65 CNEL–2019–1127 Annual Operations (extrapolated from 2009 contours)
- 65 CNEL–2025–948 Annual Operations (2010 LRPD EIR)
- 65 CNEL–2040–1541 Annual Operations (extrapolated from 2009 contours)

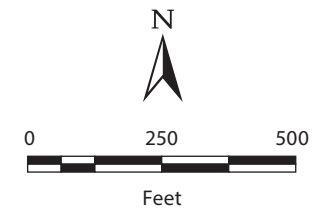


Image: Google Earth Pro, 2020

UC DAVIS

Figure 3.11-3
65 CNEL Emergency Helicopter Noise Contour with LRDP Buildout

3.12 Population and Housing

This section describes the regulatory and environmental setting for population and housing in the plan area, analyzes effects on population and housing that would result from implementation of the 2020 LRDP Update, and provides mitigation measures, if applicable, to reduce the effects of any significant impacts.

Commenters responding to the Notice of Preparation (NOP) for this Supplemental EIR, commenters expressed the following concerns related to population and housing.

- Recommend considering the potential for displacement of nearby residents in the form of increased housing costs and increasing housing inequality through gentrification.
- Desire for affordable housing to be included in new residential development.

Comments received on the NOP for this 2020 LRDP Update and Aggie Square Phase I project indicate concerns related to gentrification, displacement, and housing affordability. Therefore, these issues are acknowledged in this chapter. It should be noted that these are social and economic issues that do not relate to adverse changes in the physical environment. Therefore, they are not impacts of concern under CEQA and are discussed here for informational purposes only. (CEQA Guidelines Section 15382). The population increase associated with the 2020 LRDP Update is relatively minor compared to what was disclosed in the 2010 LRDP Final EIR and the local and regional effects of population increase are also discussed below.

3.12.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, state, and regional and local regulations, laws, and policies relevant to population and housing in the plan area. There are no federal regulations related to population and housing that apply to the 2020 LRDP Update.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, 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.

University of California President's Housing Initiative

On January 20, 2016, UC President Janet Napolitano announced a housing initiative aimed at supporting current students and future enrollment growth across the UC system. Through the initiative, UC expects to expand the pool of student housing over the next 4 years, and to accelerate the timetable for completing student housing developments that are already in the planning phase. Current estimates project that UC could add nearly 14,000 new affordable student housing beds to the campuses' stock by fall 2020, and one of the initiative's central tasks will be accelerating this

timeline. This includes the creation of new beds for undergraduates in residence halls and the addition of more graduate student housing and other apartments that are generally open to all students.

The housing initiative addresses those circumstances by applying the expertise and resources of the UC system to accelerate the creation of affordable student housing at every UC campus. The housing initiative provides a target for new student housing within the 10-campus UC system and does not set individual targets or policy numbers for UC Davis. The UC Davis Sacramento Campus does not currently provide any on-campus housing but is proposing to add housing as described in the Chapter 2, *Project Description* and below.

Federal

Tax Cuts and Jobs Act

The Tax Cuts and Jobs Act of 2017 reduced statutory tax rates at most levels of taxable income and shifted the thresholds for several income tax brackets. Under this Act, Opportunity Zones, a federal incentive, is intended to increase investment in undercapitalized communities by providing tax benefits to investors. Twelve percent of US census tracts are Opportunity Zones. In general, these zones have lower incomes, higher poverty rates, and higher unemployment rates than nondesignated census tracts (Tax Policy Center 2020). Several of these designated census tracts are in Sacramento. Census tract 28 in Oak Park is a designated opportunity area and is located within 0.5 mile of the Sacramento Campus (Figure 3.12-1).

State

California Education Code

UC's *A Master Plan for Higher Education* provides enrollment goals for new and transfer students. The California Education Code contains several provisions mandating enrollment access levels. Section 66202.5 of the California Education Code states the following.

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. The State of California likewise reaffirms its historic commitment to ensure that resources are provided to make this expansion possible, and shall commit resources to ensure that students from enrollment categories designated in subdivision (a) of Section 66202 are accommodated in a place within the system.

California Public Resources Code

Under Section 21080.09(b) of the California Public Resources Code, and pursuant to CEQA, 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 a campus LRDP. California Public Resources Code Section 21080.09(d) states the following.

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.

Regional and Local

The plan area is located near Downtown Sacramento and is within an area with many local, regional, and cooperative plans addressing housing. The City of Sacramento programs and policies addressing housing costs and demographic changes are included below.

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the Sacramento region that provides transportation planning and funding for the region. SACOG is responsible for providing current population, employment, travel, and congestion projections for regional air quality planning efforts. SACOG prepares the *Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) for the Sacramento region, which provides a planning framework that links land use, air quality, and transportation needs. to the goals of improving transportation availability and reducing greenhouse gas emissions The 2020 MTP/SCS includes information on population/housing growth projections in the region. The 2020 MTP/SCS was adopted by SACOG on November 18, 2019.

City of Sacramento General Plan

The *Sacramento 2035 General Plan* was adopted in March 2015 (City of Sacramento 2015). The Housing Element contains themes and related priority programs including the following.

- **Sustainability, Balanced Communities and Complete Neighborhoods.** The City encourages a variety of housing types in new and existing neighborhoods. The City will track and report changes in the demographic makeup of local communities and resulting impact on housing.
- **Extremely Low-Income and Special Needs Housing.** The City is committed to serving extremely low-income and homeless residents through their Ten Year Plan to End Chronic Homelessness, and the “no net loss” of public housing policy.
- **Rehabilitation and Preservation of Existing Housing.** The City will pursue opportunities for rehabilitation investment including properties in blighted neighborhoods, low economic diversity, high vacancy rates, or in areas of low growth potential.
- **Accessible Housing and Neighborhoods.** The City is committed to providing housing for all through the adoption of a Universal Design Ordinance that encourages accessibility in new housing and the adoption of a Reasonable Accommodation Ordinance that established a process to allow special consideration in the planning and building process to address the housing needs of those persons with disabilities. The City will continue this commitment to improving accessibility by encouraging universal design in new housing and providing funding to residents to retrofit their homes for increased accessibility.
- **Modest Income Homeownership.** The City will promote alternative housing types and modify existing regulations to increase availability of attainable housing.

As described in the Housing Element, the City implements the fair share process in coordination with SACOG and the State Department of Housing and Community Government. The Housing Element describes other programs implemented by the City including the target goals of the City's Regional Housing Needs Allocation and the housing production goal (51,021 units) as well as the Mixed Income Housing Ordinance that encourages production and rehabilitation of units. The City

also engages in community involvement including workshops and public participation to develop the Housing Element.

The Housing Element also contains the following goals and policies related to population and housing (City of Sacramento 2015).

GOAL H-1.2: Housing Diversity. Provide a variety of quality housing types to encourage neighborhood stability.

Policy H-1.2.1: Variety of Housing. The City shall encourage the development and revitalization of neighborhoods that include a variety of housing tenure, size and types, such as second units, carriage homes, lofts, live-work spaces, cottages, and manufactured/modular housing.

Policy H-1.2.4: Mix of Uses. The City shall actively support and encourage mixed-use retail, employment, and residential development around existing and future transit stations, centers and corridors.

Other Community Plans

The City has other plans and programs that address housing in the surrounding area, including the following.

Fruitridge Broadway Community Plan

This plan encompasses the area southeast of the Sacramento Campus, and is bordered by US 50 on the north and SR 99 on the west, and extends south to the Fruitridge/Florin Area. The Elmhurst, Oak Park, Fairgrounds, and Tahoe Park neighborhoods are some of the neighborhoods located within the Fruitridge Broadway Community Plan Area.

Policy FB.TV 1.4: Mixed Income Housing. The City shall provide opportunities for low- and moderate-income housing, particularly in the northern quadrants, to serve the large employment population base created by SMUD, CSUS, and the northwest office area.

Policy FB.TV 1.6: Development Incentives. The City shall provide financing options and economic incentives for development and redevelopment projects in the plan area. Work with the Economic Development Department to determine the eligibility of development projects for the incentive programs that are available for developers.

Sacramento's Promise Zone

The Sacramento Promise Zone drives community revitalization in 22 square miles of Sacramento's lower income neighborhoods. Sustainable communities and a sustainable economy are among two goals of this program, which is a collaboration of partner organizations. Collaboration efforts include program/service provision, community engagement, resource sharing, funding and technical assistance, and project facilitation.

Anti-Displacement/Gentrification Study

As part of the City of Sacramento's Central City Specific Plan (CCSP), the City completed an anti-displacement/gentrification study along with SHRA and SACOG. Gentrification pertains to changing the character of a neighborhood through the influx of more affluent residents and business. This complex issue occurs over time for a multitude of reasons centered around reinvestment in neighborhoods previously lacking investment. Displacement is defined as "the out-migration of certain groups of individuals or households (often low-income) from neighborhoods as a result of rising housing costs and neighborhood conditions associated with new investments in those

neighborhoods” (City of Sacramento 2018). Overall, this study found that the average apartment rental rate in the CCSP area has increased 32 percent since 2008 (to \$1,737 per month) and that vacancy rates have dropped to 3.2 percent. The study also shows that lower-income households make up approximately half of all CCSP households, and that extremely low, very low, and low-income households are at risk of displacement in the CCSP area.

The Sacramento Campus and surrounding neighborhoods (Elmhurst, Oak Park, Fairgrounds) are not located within the CCSP. Nonetheless, the CCSP anti-displacement/gentrification study illustrates the kinds of pressures occurring in the area of the Sacramento Campus. Income data for the block groups within 0.5 mile of the campus are shown below to illustrate the demographic trends of the surrounding neighborhoods (Figure 3.12-1).

Table 3.12-1. Income and Poverty Data (2014-2018 American Community Survey)

Census Tract	Block Group	Number of Households	Median Income	Sum of Households below Poverty Level	Percent Households below Poverty Level	Sum of Individuals below Poverty Level	Percent Individuals below Poverty Level
City of Sacramento	NA	196,917	\$62,477	33,448	17	97,650	18.5
001500	Block Group 2	442	\$152,917	38	8.6	983	5.7
	Block Group 3	389	\$113,393	0	*	800	4.4
001600	Block Group 4	459	\$85,813	0	*	856	*
	Block Group 5	521	\$110,104	70	13.4	1,259	15.3
001700	Block Group 1	687	\$61,696	91	13.2	1,571	13.6
	Block Group 2	504	\$72,813	67	13.3	1,048	13.0
	Block Group 3	566	\$11,488	389	68.7	989	60.7
	Block Group 4	300	\$102,606	0	*	600	*
	Block Group 5	494	\$76,324	101	20.4	1,142	23.1
001800	Block Group 1	557	\$96,910	13	2.3	949	1.4
	Block Group 2	329	\$59,215	54	16.4	682	12.5
	Block Group 3	355	\$48,393	60	16.9	633	11.7
	Block Group 4	472	\$42,012	119	25.2	1,234	18.1
	Block Group 5	634	\$52,917	26	4.1	1,169	4.1
002800	Block Group 1	467	\$45,625	181	38.8	1,541	43.5
	Block Group 2	287	\$50,485	33	11.5	888	13.2
	Block Group 3	365	\$24,917	130	35.6	1,202	48.2
002900	Block Group 1	736	\$38,026	196	26.6	1,535	18.4
	Block Group 2	607	\$76,225	13	2.1	1,101	2.7
	Block Group 3	374	\$53,235	46	12.3	804	20.3
003000	Block Group 4	559	\$50,221	34	6.1	1,366	11.3
	Block Group 5	388	\$78,889	17	4.4	923	17.3
004401	Block Group 1	333	\$22,938	152	45.6	1,032	43.0
Total/Study Area Average	NA	10,398	\$66,398	1,830	16.9	4,542	18.7

ACS 2014–2018.

* Data not available.

Environmental Setting

This section includes the environmental setting relevant to population and housing in the 2020 LRDP Update plan area.

Study Area

The project site, which is the UC Davis Sacramento Campus in Sacramento, is approximately 2.5 miles southeast of downtown Sacramento, 17 miles east of the UC Davis main campus in Davis, and 90 miles northeast of San Francisco (Figure 2-2). The Sacramento Campus is bounded by V Street on the north, Stockton Boulevard on the west, Broadway on the south, and a residential neighborhood to the east.

Population

Regional Population

The Sacramento Area Council of Governments (SACOG) states in the *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) that the six-county Sacramento metropolitan area, including Sacramento, Yolo, Sutter, Yuba, El Dorado, and Placer Counties, had a population of 2,376,311 in 2016 and is expected to grow to 2,996,832 by 2040, an increase of approximately 26 percent (Sacramento Area Council of Governments 2019). In 2019, Sacramento County had an estimated population of approximately 1.5 million residents as determined by the California Department of Finance (DOF) (California Department of Finance 2019a). Table 3.12-2 shows the expected growth in population from 2019 to 2040. By 2040, Sacramento County is expected to grow by approximately 250,000 people, an approximately 17-percent increase.

Table 3.12-2. Sacramento County Existing and Projected Population

	Population			Growth 2019–2040
	2019	2030	2040	
Sacramento County	1,546,174	1,697,555	1,799,258	253,084

Source: California Department of Finance 2019a, 2020.

City of Sacramento Population

In 2019, the City of Sacramento had an estimated population of approximately 508,172 residents as determined by DOF (California Department of Finance 2019c). Table 3.12-3 shows Sacramento's population growth over the last few decades. Since 1990, Sacramento's population has seen steady growth, greater than the rate of California as a whole (Sacramento Area Council of Governments 2019). Growth is expected to continue for the region and the city, since 2016, has increased an average of 1.5 percent each year. The *Sacramento 2035 General Plan* estimates that by 2035 the population will be around 640,000 (City of Sacramento 2013).

Table 3.12-3. City of Sacramento Population

Year	City of Sacramento Population
1990	369,365
2000	407,018
2010	466,488
2015	483,303
2016	486,154
2017	493,771
2018	500,724
2019	508,172

Source: California Department of Finance 2019b, 2019c.

Campus Population

The onsite daily population is composed of patients, patient attendants, visitors, staff, faculty and other academic personnel, students, interns, residents, and fellows. As of 2019, the total average daily patient-related population (patients and visitors) was about 4,615 persons, and there were about 7,030 staff, and about 1,902 students present on the campus for a total daily population of approximately 13,547 people. The 2010 LRDP projected total population growth would be 19,719 people by 2025 or 45 percent growth from 2010 to 2025. The 2020 LRDP Update anticipates that the onsite daily population will be approximately 21,200 by 2040 (see Chapter 2, *Project Description*, Table 2-1).

Housing

Regional Housing

Housing options throughout the Sacramento region are typical of a large metropolitan area with a wide variety of prices and attributes. The DOF estimated that in 2019, Sacramento County had 574,449 total housing units with an 8.3 percent vacancy rate (California Department of Finance 2019c). Additionally, SACOG states in the 2020 MTP/SCS that the six-county Sacramento metropolitan area is estimated to have approximately 1,181,251 housing units by 2040 (Sacramento Area Council of Governments 2019). In 2019, the City of Sacramento had an estimated 196,890 total housing units, with a 9.2 percent vacancy rate (California Department of Finance 2019c). The campus' onsite daily population resides throughout the Sacramento metropolitan area.

According to the U.S. Census (U.S. Census Bureau 2020), there are approximately 1,200 housing units within ½ mile of the campus. Slightly more than 50 percent of these total housing units are owner-occupied, and the remainder are renter-occupied. The average of Median Value of owner-occupied housing units is \$348,936. Table 3.12-4 shows the housing statistics in the block groups within 0.5 mile of the study area (Figure 3.12-1).

Table 3.12-4. Housing Characteristics (ACS 2007–2011 and ACS 2014–2018)

Census Tract	Block Group	ACS 2007–2011					ACS 2014–2018					Change				
		Sum of Total Housing Units	Percent Owner Occupied	Percent Renter Occupied	Percent Vacant	Median Value (Owner Occupied Units)	Sum of Total Housing Units	Percent Owner Occupied	Percent Renter Occupied	Percent Vacant	Median Value (Owner Occupied Units)	Change in Housing Units	Percent Change in Owner Occupied	Percent Change in Renter Occupied	Percent Change in Vacant	Change in Median Value (Owner Occupied Units)
City of Sacramento	NA	207,508	46%	45%	9%	\$278,685	210,459	45%	49%	6%	\$330,777	2,951	-1%	4%	-3%	\$52,092
001500	Block Group 2	470	73%	24%	3%	\$637,900	455	72%	25%	3%	\$717,900	-15	-1%	1%	0%	\$80,000
	Block Group 3	436	42%	42%	17%	\$350,700	401	64%	33%	3%	\$469,800	-35	22%	-9%	-14%	\$119,100
001600	Block Group 4	496	49%	33%	17%	\$375,300	543	53%	31%	15%	\$473,000	47	4%	-2%	-2%	\$97,700
	Block Group 5	490	64%	27%	9%	\$667,400	521	74%	26%	0%	\$608,200	31	10%	-1%	-9%	-\$59,200
001700	Block Group 1	739	56%	37%	7%	\$461,800	765	69%	21%	10%	\$370,900	26	13%	-16%	3%	-\$90,900
	Block Group 2	334	78%	22%	0%	\$338,800	540	73%	20%	7%	\$344,800	206	-5%	-2%	7%	\$6,000
	Block Group 3	561	11%	89%	0%	\$171,600	566	19%	81%	0%	\$418,500	5	8%	-8%	0%	\$246,900
	Block Group 4	416	41%	55%	3%	\$343,800	334	65%	25%	10%	\$366,500	-82	24%	-30%	7%	\$22,700
	Block Group 5	708	36%	49%	16%	\$258,900	537	63%	29%	8%	\$313,000	-171	27%	-20%	-8%	\$54,100
001800	Block Group 1	419	52%	30%	19%	\$317,800	683	27%	55%	18%	\$416,900	264	-25%	25%	-1%	\$99,100
	Block Group 2	300	27%	50%	23%	\$226,900	398	32%	51%	17%	\$343,400	98	5%	1%	-6%	\$116,500
	Block Group 3	343	5%	95%	0%	\$318,200	418	11%	74%	15%	*	75	6%	-21%	15%	*
	Block Group 4	527	26%	64%	11%	\$221,000	507	30%	63%	7%	\$241,900	-20	4%	-1%	-4%	\$20,900
	Block Group 5	662	47%	48%	5%	\$220,200	667	35%	60%	5%	\$366,700	5	-12%	12%	0%	\$146,500

Census Tract	Block Group	ACS 2007–2011					ACS 2014–2018					Change				
		Sum of Total Housing Units	Percent Owner Occupied	Percent Renter Occupied	Percent Vacant	Median Value (Owner Occupied Units)	Sum of Total Housing Units	Percent Owner Occupied	Percent Renter Occupied	Percent Vacant	Median Value (Owner Occupied Units)	Change in Housing Units	Percent Change in Owner Occupied	Percent Change in Renter Occupied	Percent Change in Vacant	Change in Median Value (Owner Occupied Units)
002800	Block Group 1	407	35%	21%	45%	\$165,800	527	26%	62%	11%	\$222,100	120	-9%	41%	-34%	\$56,300
	Block Group 2	249	36%	36%	28%	\$216,700	287	38%	62%	0%	\$213,200	38	2%	26%	-28%	-\$3,500
	Block Group 3	511	29%	59%	12%	\$204,000	464	25%	53%	21%	\$201,900	-47	-4%	-6%	9%	-\$2,100
002900	Block Group 1	780	36%	52%	12%	\$273,300	747	65%	34%	1%	\$263,600	-33	29%	-18%	-11%	-\$9,700
	Block Group 2	627	63%	37%	0%	\$273,800	621	68%	30%	2%	\$308,100	-6	5%	-7%	2%	\$34,300
	Block Group 3	306	100%	0%	0%	\$243,800	374	83%	17%	0%	\$321,900	68	-17%	17%	0%	\$78,100
003000	Block Group 4	556	62%	30%	8%	\$248,500	559	71%	29%	0%	\$269,900	3	9%	-1%	-8%	\$21,400
	Block Group 5	501	43%	40%	17%	\$270,100	457	52%	33%	15%	\$240,000	-44	9%	-7%	-2%	-\$30,100
004401	Block Group 1	423	14%	65%	20%	\$193,300	362	28%	64%	8%	\$184,400	-61	14%	-1%	-12%	-\$8,900

* Data not available.

Campus Housing

The 2010 LRDP did not include residential uses. The existing onsite daily population (i.e., students, faculty, staff, patients, and visitors) seek housing throughout the Sacramento metropolitan region. The 2020 LRDP Update proposes to include a new projection of campus housing, which would be in the Education, Research, and Housing land use designation. By 2040, there would be up to 500 residential units on the Sacramento Campus.

Overview of Gentrification and Displacement

According to CEQA Guidelines Section 15064(d),(e), a CEQA document must consider the reasonably foreseeable environmental consequences of physical changes resulting from a project's economic or social changes. Social and economic effects are only relevant under CEQA if they would result in, or are caused by, an adverse physical impact to the environment. Comments received on the NOP and in public meetings expressed concern and various opinions directly related to these issues regarding the 2020 LRDP Update and Aggie Square.

For purposes of this Supplemental EIR, the following terms and their definitions are used.

- **“Gentrification”** is a shift in an urban community toward higher income residents and/or businesses and increasing property values, sometimes at the expense of the lower income residents of the community. Gentrification is often associated with increases in educational attainment and household incomes, as well as an appreciation in housing prices. It is also often associated with, but not directly linked to, an overall change in the racial or ethnic makeup of a community. Gentrification does not necessarily include any level of displacement that may be triggered in the process.
- **“Indirect displacement”** is the potential outcome of community investment that results in rising property values, benefiting homeowners and property owners but causing serious economic challenges for renters and prospective owners. These challenges may include existing residential renters and local small businesses facing higher and unaffordable rents, and potential local homebuyers trying to compete with outside cash investors for single-family homes. As a result, housing or business costs may become increasingly unaffordable, and existing tenants may be forced by changing economic trends to find more affordable housing or business locations elsewhere, if available.
- **“Direct displacement”** is a more intentional outcome, at a small or broad scale, of planned changes in land use and the direct redevelopment of existing neighborhoods or business properties. Direct displacement occurs when existing homes and/or business properties are converted to new and different land uses or when affordable rental properties are converted into less affordable use (e.g., condominiums). New or changed land use regulations that facilitate or enable such changes in land use can be the root cause of direct displacement.

CEQA Considerations Related to Gentrification and Displacement

CEQA Guidelines define the parameters under which consideration of socio-economic impacts is included in an EIR. Section 15131(a) of the Guidelines states that “Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project, through anticipated economic or social changes resulting from the project, to physical changes caused in turn by the economic or social

changes. . . . The focus of the analysis shall be on the physical changes.” Thus, changes in population and demographics in the Supplemental EIR are generally characterized for CEQA purposes as social and economic effects, not physical effects on the environment, and may not be treated as a significant effect under CEQA.

Based on the CEQA Guidelines, and its requirements, this Supplemental EIR does not address the effects of the project on the potential for increased gentrification, a change measured under social and economic demographic criteria. The Draft EIR does not speculate on the extent to which potential indirect displacement of existing residences or businesses may result in physical changes as a result of implementation of the project. The extent to which indirect displacement may occur (or is already occurring) in nearby neighborhoods depends on the how much community-based organizations and local institutions, including the University, can support and enable existing residents and businesses to participate in and benefit from new economic activity in the plan area. The extent to which equity-based programs could be successful in achieving economic development for all depends, in large measure, on the cooperative efforts of existing residents and businesses, City staff and elected officials, nonprofit organizations, and developers of projects envisioned under this plan.

This Supplemental EIR also does not speculate on potential secondary physical impacts (such as increased commute distances and associated increases in emissions of air pollutants, GHG emissions, and traffic congestion) that might result from indirect displacement because the magnitude of potential indirect displacement is not known. Further, the significance of secondary physical impacts would be fully dependent upon decisions made by residents and businesses that may experience indirect displacement that may result from implementation of the 2020 LRDP Update regarding individual choices (or lack of choices) about where they live and work. In addition, the effects of the COVID-19 pandemic on social and economic conditions in the plan area will continue for months or years. The effects of the pandemic on social and economic factors such as housing costs, employment, stability of local businesses as well as the nonprofit and government services that are responding to the pandemic, are unknown. A detailed assessment of future social and economic conditions in relation to the 2020 LRDP Update would be highly speculative at this time.

Pursuant to CEQA Guidelines, this Supplemental EIR does analyze the issue of direct displacement associated with implementation of the 2020 LRDP Update. The issues addressed in this section include whether the 2020 LRDP Update would result in directly displacing substantial numbers of housing units and necessitating construction of replacement housing elsewhere, and whether it would result in direct displacement of substantial numbers of people, necessitating the construction of replacement housing or employment elsewhere.

Non-CEQA Considerations Related to Gentrification and Displacement

Although gentrification and indirect displacement are not considered part of the permanent physical environment and thus are not environmental issues requiring analysis under CEQA, and although UC Davis does not have thresholds of significance related to these issues, the following overview is provided for informational purposes to provide the public and decision-makers with an overview of gentrification and displacement as a community concern. This information may be useful in evaluating the merits of the 2020 LRDP Update. Additionally, the information may be useful to decision-makers in evaluating the relationship of the environmental effects of the 2020 LRDP

Update and future University efforts to participate in the non-CEQA considerations, solutions, and partnerships that may work toward minimizing and ameliorating gentrification and displacement.

Project Information Regarding Gentrification and Displacement

The 2020 LRDP Update would not directly displace any housing. Housing costs are rising within the study area so it is reasonably foreseeable that an indirect effect of the 2020 LRDP Update could be some level of displacement of existing low-income residents as a result of new investment to meet the demands of employees at the expanded project facilities. The extent of this displacement that is attributable to the project, the locations of future displacement, and the locations to which displaced residents may move are not known, however. Therefore, the indirect physical changes that might occur are speculative. Following is a qualitative discussion of displacement and gentrification. California has a housing shortage, which causes prices to increase, and the Sacramento region is a part of this statewide trend. Neighborhoods with increasingly expensive housing markets and insufficient affordable housing could result in gentrification, a resultant increase in housing prices, and displacement of existing residents who can no longer afford the cost of remaining in the neighborhood. This could cause long lasting effects on the lower income residents who are forced to move. Long term adverse effects of gentrification and displacement include moving to locations with fewer job opportunities, longer, more costly commutes, and distance from established community resources such as healthcare and personal support systems (City of Sacramento 2018).

In the study area, there has been an increase in housing units consistent with the City's growth (Table 3.12-3). There has been an increase in the median value of homes, which is also consistent with trends in the City. There has been a decrease in the number of vacant units. Overall the City is experiencing a slight decrease (1 percent) in homeownership in the past decade. In the study area, there are no common trends. Instead, ownership and occupancy rates vary by block group. Although the census data in Table 3.12-4 doesn't clearly show trends of gentrification and displacement, these trends are perceived to be occurring in Sacramento, and in the study area. Some block groups shown in Table 3.12-1 have a notably lower median household income and higher poverty levels compared to the rest of the study area and compared to the city as a whole (census tract 001700 block groups 3 and 5, census tract 002800 block groups 1 and 3, census tract 002900 block group 3, and census tract 004401 block group 1).

In addition to the types of census and housing data described above, additional information regarding rising rents, lack of housing, housing affordability, and economic pressure on low income residents has been reported by the media and local advocacy groups. Reporting on housing pressures in the Sacramento area, including the neighborhoods near the Sacramento Campus, has identified the influx of residents from the San Francisco Bay area seeking cheaper housing as a contributing factor to recent housing price increases in Sacramento (Ho 2019).

In Sacramento, efforts are underway to address these housing and displacement effects. Advocacy groups such as the Sacramento Community Land Trust have formed to advocate for and create partnerships to help address housing supply and affordability. The organization's mission statement says the organization "prevents displacement and builds historically discriminated neighborhood power to combat deterioration and market speculation by fostering equitable development for generations to come." The group formed in recent years and is now a nonprofit (Sacramento Community Land Trust 2020).

The City of Sacramento, Sacramento Housing Authority, and SACOG, the regional metropolitan planning organization have indicated that additional local and regional efforts to increase housing

supply, allow residential housing with higher densities, and increase affordable housing units are under way. These are key issues included in current planning for the Sacramento region.

In April 2019, the City of Sacramento engaged a team of national and local economic development experts, led by RW Ventures, LLC, to develop an Inclusive Economic Development Strategy and Action Plan. Building from a deep analysis of the Sacramento region's economy, this project engages stakeholders in creating an action agenda that establishes an overall vision and economic development framework, aligns existing work, and specifies synergistic growth strategies and initiatives. The plan will move the City and its partners to implement transformative economic growth projects that align with a comprehensive framework for sustained growth.

Along with inclusive economic development, the effort is designed to address neighborhood capacity building and business capacity building, and to pursue an affordable housing trust fund framework that was adopted in January 2020 by the Sacramento City Council. With the framework, the City Council unanimously agreed to take steps toward issuing a city housing bond for investment into local affordable housing development, including allocations toward extremely low, very low, and low/median income housing, and efficiency housing units that cost \$100,000 or less in total government subsidy. The framework also includes priority policies of funding preferences for projects that are shovel-ready, have the lowest cost per unit, demonstrate collaboration, leverage other resources and funds (state, federal, private, etc.), invest in catalyst sites on major corridors and focused neighborhoods, use local construction labor force, further community equity and community health, and utilize innovation and replicable self-sustaining models (City of Sacramento 2020).

To address housing needs, SACOG recently launched a planning, advocacy, and partnership effort called the Green Means Go program, which aims to lower GHG emissions in the six-county Sacramento region by accelerating infill development, reducing vehicle trips, and electrifying remaining trips. SACOG and City of Sacramento efforts to initiate the Green Means Go program have focused first on the Stockton Boulevard corridor near the Sacramento Campus to improve both housing resources and high-efficiency transit operations (Sacramento Area Council of Governments 2020).

In addition, the Sacramento Housing and Redevelopment Agency was created to ensure the ongoing development of affordable housing and to continuously fuel community redevelopment projects in the city and county of Sacramento. The agency assists in planning and completing affordable housing projects; it focuses on four main goals to revitalize communities: provide affordable housing opportunities, increase community revitalization, assist with neighborhood investment and to serve as the Housing Authority for the city and county of Sacramento (Sacramento Housing and Redevelopment Agency 2018).

Even with these multiple efforts to reduce gentrification and the displacement effects that can result from increased investment and rising real estate costs in underserved neighborhoods, the efficacy of these remediation efforts is unknown at this time. UC Davis remains committed to participating in planning and partnerships to address gentrification and displacement so that inclusive economic development assists the nearby communities. During implementation of the 2020 LRDP Update and the development of Aggie Square Phase I, UC Davis anticipates assisting with the following initiatives.

- Food access and creating healthy communities
- Workforce training and lifelong learning

- Creation of additional housing supply and supporting affordable housing initiatives
- Local hiring and local procurement efforts
- Assembling or participating in large-scale community serving partnerships focused on neighborhoods surrounding the project site.

3.12.2 Environmental Impacts

This section describes the environmental impacts associated with population and housing that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

The effects of population growth are evaluated below by comparing the population growth that would be induced through implementation of the 2020 LRDP Update to the existing and projected regional population.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect on population and housing if it would result in any of the conditions listed below.

- Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure).
- Displacement of a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere.

Impacts and Mitigation Measures

Impact LRDP-POP-1: Induce substantial unplanned population growth either directly or indirectly

Implementation of the 2020 LRDP Update would increase the daily population of the UC Davis Sacramento Campus through increased student enrollment, non-UC employees, and UC Davis Health faculty and staff. However, this would not result in a substantial increase to the population of the Sacramento region. Therefore, this impact would be **less than significant**.

Implementation of the proposed 2020 LRDP Update would increase the daily population of the UC Davis Sacramento Campus from approximately 13,547 persons in 2019 to approximately 21,200 persons in 2040 or upon full implementation of the 2020 LRDP Update, an increase of about 7,653 persons. This includes patients and visitors, who make up the facility's service population, and future residents of the proposed onsite housing. The 2010 LRDP estimated that by 2025, the average daily onsite population would be 19,719. The projected difference between the 2020 LRDP Update and the 2010 LRDP is approximately 1,480 persons. Table 2-1 in Chapter 2 presents the change in

the campus' average daily population from the baseline year (2019) to 2040 by major population groups.

Patients and visitors who are part of the onsite daily population are not residents and would not be considered part of an increase in population.

The 2020 MTP/SCS included both population and housing growth projections that incorporate the campus population growth anticipated in the 2010 LRDP. Because the 2020 LRDP Update includes additional population growth of approximately 1,481 people, including approximately 500 residential housing units that were not anticipated in the 2020 MTP/SCS, the 2020 LRDP Update exceeds that plan's projections. However, the increased onsite daily population is partially comprised of patients and visitors who are not considered residents. The non-patient portion of the increased onsite daily population is partially comprised of existing Sacramento metropolitan area residents. While it is possible that the implementation of the 2020 LRDP Update could result in additional employment and students from elsewhere, this represents an incremental increase in population in the region. Similarly, onsite residents represent an incremental increase in population and housing. Compared to the County alone, the 1,481 persons not included in the 2020 MTP/SCS growth projections represents 0.08 percent of the County's population.

As stated above, much of this population growth was analyzed in the 2010 LRDP Final EIR, and the increase from the 2010 LRDP Final EIR is approximately 1,481 persons total. Included in this population increase is a new residential population of 411 residents which represents the population including dependents in new on-campus housing associated with Aggie Square Phase I. There would be additional 175 units built between 2030 and 2040; those residents would comprise a mix of employees, students, and their dependents who may live on campus in the future and are accounted for in the daily onsite population presented above. The new residential population will live on campus, which would not result in displacement or construction of housing elsewhere.

This increase would not be substantial. The proposed 2020 LRDP Update would not induce substantial unplanned population growth in the Sacramento region, and the project impact would be **less than significant**.

The 2010 LRDP Final EIR concluded that impacts on population and housing would be less than significant. Therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-POP-2: Directly displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere

Implementation of the 2020 LRDP Update would not directly displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. Therefore, this impact would be **less than significant**.

All projects proposed by the 2020 LRDP Update would be accommodated within the existing campus boundary and would not directly displace existing housing or people. As stated previously, direct displacement occurs when existing homes and/or businesses are converted to new and different land uses or when affordable rental properties are converted into less affordable use.

There are no housing units on campus, and no businesses will be converted or otherwise affected. Each construction project that would occur under the 2020 LRDP Update would take place within the existing campus boundary. The project would not remove existing housing units and would not result in conditions that would make existing housing units less affordable.

The 2020 LRDP Update includes various projects that would expand the building square footage of the campus. New jobs will be provided, but as stated under Impact LRDP-POP-1, the employees and student population increase is partially comprised of existing Sacramento metropolitan area residents, which would not result in a substantial increase in the demand for housing and therefore, the displacement of people or housing. The residential housing proposed in the 2020 LRDP Update would be located on campus, and therefore would not require the demolition of any existing housing or the displacement of any existing residents. While it is possible that the implementation of the 2020 LRDP Update could result in some additional employment and students from elsewhere that would require housing, this number is not known and cannot be known without resorting to speculation.

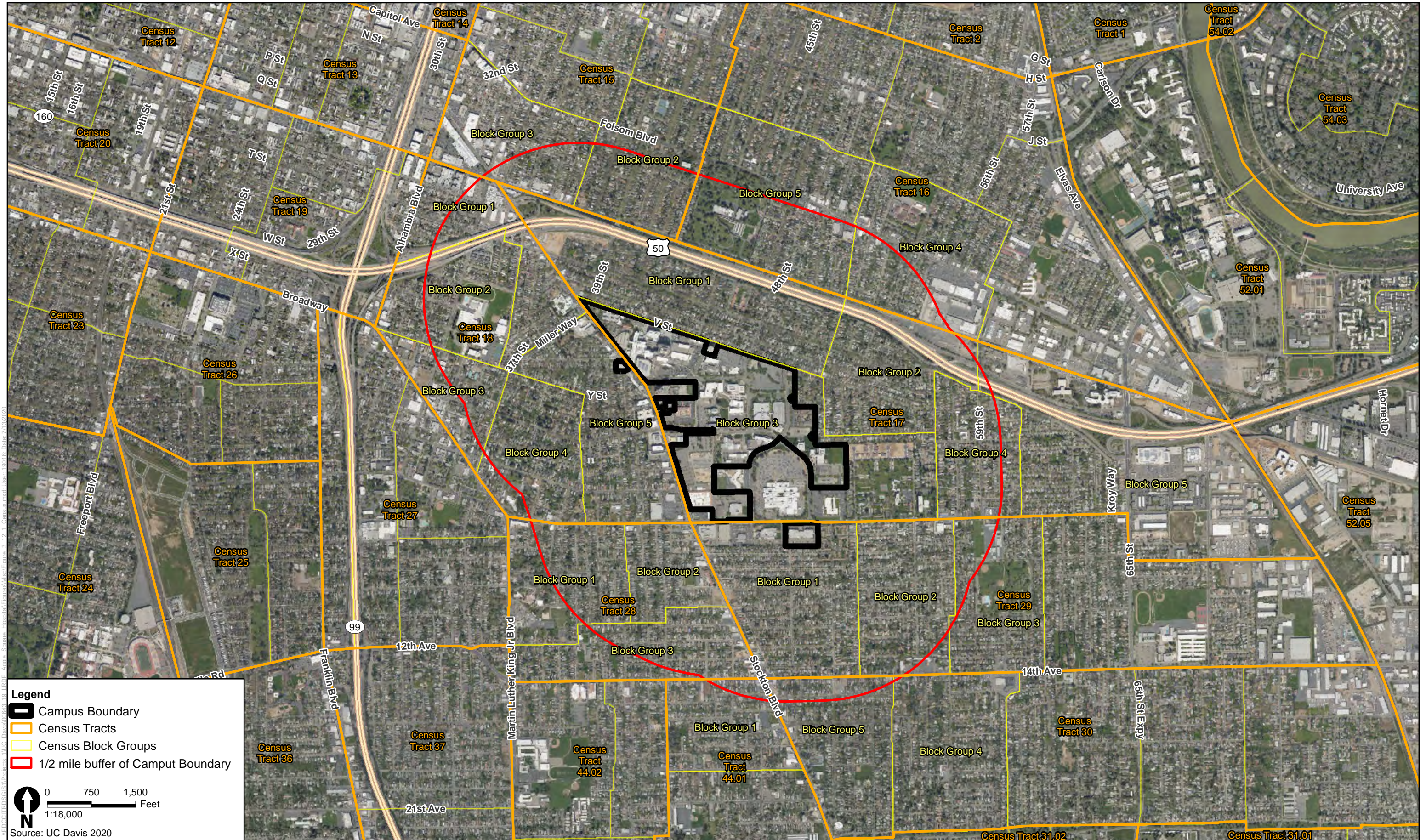
The City's *2035 General Plan* has a policy to locate residential uses near transit corridors and transit lines. In addition, UC Davis partners with the City of Sacramento on various initiatives and strategies, including promoting affordable housing. UC Davis is committed to continuing this partnership with the City to provide jobs, housing initiatives, and other services that enhance the community they share. The extent that the project may indirectly result in displacement, the potential environmental impacts of displacement is speculative because the location, type, and extent of impacts are unknown. In addition, the extent to which efforts to ameliorate displacement could be successful are not known and the overall effects of the COVID 19 pandemic and economic recovery efforts related to the pandemic are not known. Assessing these factors holistically and presenting information describing the future condition in relation to the effects of the proposed project as contributing factors to that future condition is not possible at this time and would be overly speculative. There is no evidence that any indirect displacement/gentrification would result in a significant adverse effect on the physical environment.

The 2020 LRDP Update entails construction of new housing within the Sacramento Campus. Because no existing housing would be displaced, requiring the construction of replacement housing that would result in environmental effects this impact would be **less than significant**.

The analysis in the Initial Study prepared for the 2010 LRDP concluded that the 2010 LRDP would not displace people or housing; the 2020 LRDP Update would not result in a new or substantially more severe impact than those disclosed in the 2010 LRDP 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.



3.13 Public Services

This section describes the regulatory and environmental setting for public services (e.g., fire protection, police protection, schools, parks and other public facilities) in the plan area, analyzes effects on public services that would result from implementation of the 2020 LRDP Update, and provides mitigation measures to reduce the effects of any significant impacts, if applicable.

3.13.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, federal, state, and regional and local regulations, laws, and policies relevant to public services in the plan area.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to local land use regulations whenever using property under its control in furtherance of its educational mission. Although UC Davis may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the campus when it is appropriate and feasible, it is not bound by those plans and policies in its planning efforts.

There are no University of California regulations specifically related to public services that apply to the 2020 LRDP Update.

Federal

Higher Education Opportunity Act

The Campus Fire Safety Right-to-Know Act in the Higher Education Opportunity Act was signed by President George W. Bush on August 1, 2008. Specifically, the legislation requires that a Fire Safety Report be published by the University containing statistics for the following in each on-campus student housing facility during the most recent calendar year for which data are available.

- 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 the University.

State

Uniform Fire Code

The Uniform Fire Code with the State of California Amendments contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code (CFC) include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The CFC, Part 9 of Title 24 of the California Code of Regulations, contains specialized technical regulations related to fire and life safety. The CFC is revised and published every 3 years by the California Building Standards Commissions.

California Health and Safety Code

State fire regulations are set forth in Sections 13000 *et seq.* of the California Health and Safety Code. The code includes regulations for building standards (as also set forth in the California Building Code), 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, Title 8, Section 1270, Fire Prevention, and Section 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 for 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 Code of Regulations

The California Code of Regulations, Title 5, Education, governs all aspects of education in the state.

Leroy F. Greene School Facilities Act of 1998

This bill, commonly known as Senate Bill 50, placed limitations on cities and counties with respect to mitigation requirements for school facilities. Senate Bill 50 permits school districts to levy fees, based on justification studies, for the purposes of funding construction of school facilities, subject to established limits. The limits were set in 2000, can be adjusted annually for inflation, and can be leveled based on the square footage of residential (\$1.93 per square foot in 2000) and commercial-industrial square footage (\$0.31 per square foot in 2000). These fees do not apply to development at University of California campuses because they are not under the jurisdiction of a city or county.

California Building Code

The State of California provides minimum standards for building design through the California Building Code (CBC), which is located in Part 2 of Title 24 (California Building Standards Code) of the California Code of Regulations. The CBC is based on the International Building Code but has been amended for California conditions. 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.

Strategic Fire Plan for California

The Strategic Fire Plan for California is the state's "road map" for reducing the risk of wildfire. The Strategic Fire Plan reflects the California Department of Forestry and Fire Protection's (CAL FIRE's) focus on (1) fire prevention and suppression activities to protect lives, property, and ecosystem services, and (2) natural resource management to maintain the state's forests as a resilient carbon sink to meet California's climate change goals and to serve as important habitat for adaptation and mitigation (California Department of Forestry and Fire Protection 2018).

Regional and Local

The following goals and policies from the *City of Sacramento 2035 General Plan* Education, Recreation and Culture and Public Health and Safety elements are most applicable to the 2020 LRDP Update (City of Sacramento 2015).

GOAL ERC 1.1: Efficient and Equitable Distribution of Facilities. Provide efficient and equitable distribution of quality educational facilities for life-long learning and development of a highly skilled workforce that will strengthen Sacramento's economic prosperity.

Policy ERC 1.1.4: Higher Education. The City shall encourage and support the development, expansion, and upgrade of higher education facilities such as community colleges, California State University, and private universities.

GOAL PHS 1.1: Crime and Law Enforcement. Work cooperatively with the community, regional law enforcement agencies, local government and other entities to provide quality police service that protects the long-term health, safety, and well-being of our city, reduce current and future criminal activity, and incorporate design strategies into new development

Policy PHS 1.1.2: Response Time Standards. The City shall strive to achieve and maintain optimal response times for all call priority levels to provide adequate police services for the safety of all city residents and visitors.

GOAL PHS 2.1: Fire Protection and Emergency Medical Services. Provide coordinated fire protection and emergency medical services that address the needs of Sacramento residents and businesses and maintain a safe and healthy community.

Policy PHS 2.1.2: Response Time Standards. The City shall strive to maintain emergency response times that provide optimal fire protection and emergency medical services to the community.

Environmental Setting

This section includes the environmental setting relevant to public services in the 2020 LRDP Update plan area.

Fire Protection and Emergency Services

The City of Sacramento Fire Department (SFD) provides primary fire response and prevention, natural disaster response, hazardous materials incident response, and emergency medical service to

the UC Davis Sacramento Campus. The nearest fire station, Station 6, is approximately 0.6 mile west of the campus at 3301 Martin Luther King Jr Boulevard. SFD staffs 24 fire engines, 9 ladder trucks and 1 heavy rescue, at 24 fire stations, which are divided into 3 battalions. Each engine and truck is staffed with 4 persons, except for 1 engine, which is staffed with 3 persons. Battalion chiefs coordinate all the activities at an emergency scene. With 3 battalion chiefs, 34 suppression companies, 15 ALS ambulances and 1 Emergency Medical Services captain, the daily operational staffing is 169 personnel. Department personnel respond to approximately 90,000 calls each year and provide service to approximately 480,000 residents and over 20,000 businesses located in Sacramento (City of Sacramento Fire Department 2020). Tables 3.13-1 through 3.13-3 show more detailed breakdowns of SFD activity.

Table 3.13-1. Total Incidents

Incident Category	Incidents	Percent
Fire	2,991	3.59%
Medical Emergency	51,303	58.16%
Other	28,797	38.25%
Total	83,091	100%

Source: City of Sacramento Fire Department 2018.

Table 3.13-2. Station 6 Incidents

Station	Incidents	Percent
6	5,984	7.20%
Other	77,107	92.30%
Total	83,091	100%

Source: City of Sacramento Fire Department 2018.

Table 3.13-3. Average Response Time (City-Wide)

Vehicle	Time (Minutes:Seconds)
Engine	05:27
Medic	07:01
Truck	05:46

Source: City of Sacramento Fire Department 2018.

Police Protection

UC Davis

The UC Davis Police Department provides police services for all buildings and facilities either owned or leased by UC Davis Health System. UC Davis Police Department operates a substation on the Sacramento Campus that provides all needed police services for the campus, including for leased space. A number of UC Davis patrol officers are assigned to the Sacramento Campus. Patrol officers respond to all calls for service in the community. They handle a wide variety of duties including

responding to emergencies, investigating crimes and filing reports, checking out suspicious persons and vehicles, conducting traffic accident investigations, and enforcing all traffic laws. Because UC Davis Sacramento Campus employees live throughout the Sacramento area and are not necessarily concentrated near the campus, their families use police services throughout the region. The UC Davis Police Department has mutual aid agreements with other law enforcement agencies in Sacramento County, including the City of Sacramento.

City of Sacramento

The City of Sacramento Police Department (SPD) provides primary police protection services to Sacramento. The SPD's most recent available data comes from the 2016 Annual Report. SPD employs a total of 697 sworn officers and 269 civilian personnel (City of Sacramento Police Department 2017). These officers and civilians staff the Patrol, Communications Center, Specialty Units, Investigations, Forensics, Evidence and Property, Records, and Contract Services departments. SPD handled 351,472 calls for service in 2016. These calls for service involved criminal investigations, traffic collisions and suspicious circumstances, domestic violence cases, driving under the influence of alcohol, alarms at residential and commercial buildings, and medical aid calls.

The nearest SPD station is at 5303 Franklin Boulevard, approximately 3.5 miles southwest of the UC Davis Sacramento Campus. The UC Davis Sacramento Campus is in SPD's East Command District, which encompasses CSU Sacramento, Oak Park, Stockton Boulevard, Elder Creek, the eastern part of the city south of the American River, and east of State Route 99.

In 2014, Sacramento experienced an 8-year low for property and violent crimes. While there was a slight uptick in these crimes in 2015, a reduction was seen again for both types of crimes in 2016. Excluding 2014, the 2016 property crime numbers are the lowest they have been in the last decade, and violent crime rate is lower than the 10-year average (Table 3.13-4). As shown in Table 3.13-5, calls for service increased by 6.3 percent compared with 2015, while officer-initiated activity decreased by 9.0 percent (City of Sacramento Police Department 2017).

Table 3.13-4. Crime Rates

Year	Property Crime Reports	Violent Crime Reports	Relative Increase (Percent)
2007	24,399	5,128	-
2008	22,499	4,660	-8.0%
2009	21,001	4,165	-7.3%
2010	20,200	4,112	-3.4%
2011	18,563	3,354	-9.9%
2012	19,967	3,520	+7.2%
2013	17,980	3,137	-10.1%
2014	15,078	2,968	-14.5%
2015	16,500	3,611	+11.4%
2016	15,283	3,549	-6.4%

Source: City of Sacramento Police Department 2017.

Table 3.13-5. City of Sacramento Police Department Calls for Service

Year	Calls for Service	Officer Initiated	Total
2012	222,243	109,097	331,340
2013	219,469	110,398	329,867
2014	208,363	120,910	329,273
2015	231,592	115,697	347,289
2016	246,292	105,180	351,472

Source: City of Sacramento Police Department 2017.

Police calls to service are categorized by the priority of the reported situation. Definitions of priority are as follows.

- Priority 1 is an officer-initiated emergency request for help.
- Priority 2 is an emergency requiring immediate police response to preserve life or apprehend subjects.
- Priority 3 is a crime against a person occurring within 15 minutes or less, a call with potential to become violent, or an at-risk missing person.
- Priority 4 is a time element misdemeanor, a report call requiring a sworn officer, or a nighttime ringing alarm.
- Priority 5 is a report call, or daytime ringing alarm where an immediate response is not required.
- Priority 6 is a lower priority call, parking violation, burglary report, or found property or evidence.

Response times are shown in Table 13.3-6.

Table 3.13-6. City of Sacramento Police Department Response Times

Priority	1	2	3	4	5	6
Average Response Time (Hours:Minutes:Seconds)	0:09:57	0:11:20	0:27:40	0:27:40	0:32:51	1:07:04

Source: City of Sacramento Police Department 2017.

Schools

The UC Davis Sacramento Campus provides higher education instruction as a part of the core mission of operating the hospital and professional schools. As stated in the 2010 LRDP Final EIR, school services in the plan area are provided by the Sacramento City Unified School District (SCUSD). Because UC Davis Sacramento Campus employees live throughout the Sacramento Area Council of Governments area and are not necessarily concentrated near the campus, their families use school services provided by various school districts throughout the region.

Sacramento City Unified School District

SCUSD is the 10th largest public kindergarten (K)–12 district in California and serves 46,933 students on 76 campuses including neighborhood schools and specialty programs (Sacramento City Unified School District 2020). The UC Davis Sacramento Campus is in the assignment area of the following schools: David Lubin Elementary, Tahoe Elementary, Kit Carson International Academy, Hiram Johnson High School, and American Legion Continuation High School.

The UC Davis Sacramento Campus is also within a couple miles of several independent and charter schools, including Capitol Heights Academy, Sacramento Charter High school, and St. Hope Public School (grades 6–8), and Oak Park Prep.

Table 3.13-7. School Enrollment near the UC Davis Sacramento Campus

School Name	Enrollment (2018–2019)	Student to Teacher Ratio (2017–2018)	District Average Ratio (2017–2018)	Percent Difference
David Lubin Elementary, K–6	549	21:1	21:1	0.0%
Tahoe Elementary, K–6	381	23:1	21:1	+9.5%
Kit Carson International Academy, 7–12	533	18:1	21:1	-14.3%
Hiram Johnson High School, 9–12	1,568	18:1	21:1	-14.3%
American Legion Continuation High School, 10–12	188	18:1	21:1	-14.3%

Source: Sacramento City Unified School District 2020.

Due to the potential for employees and staff associated with the 2020 LRDP Update to live outside of UC Davis and the city of Sacramento, facility and attendance information for other nearby school districts is provided below.

Washington Unified School District

Washington Unified School District consists of seven elementary schools (six K–8 schools and one transitional K–5 school), a comprehensive high school, five alternative programs, and a charter school (Washington Unified School District 2020).

Elk Grove Unified School District

Elk Grove Unified operates 42 elementary schools, 9 middle schools, 9 comprehensive high schools, 4 alternative education schools, 1 charter school, 1 virtual online K–8 program, 1 special education school and 1 adult education school. In addition, the district offers preschool programs at 15 school sites, an adult education program and a career training center for adults (Elk Grove Unified School District 2020).

Twin Rivers Unified School District

Twin Rivers Unified operates 28 elementary schools, 5 middle schools, 5 comprehensive high schools, 8 charter schools, and 8 additional schools. These schools serve over 25,000 students, and employ over 3,000 staff members (Twin Rivers Unified School District 2020).

San Juan Unified School District

San Juan Unified School District (SJUSD) is the 11th largest school district in California with approximately 46,000 students. SJUSD has 33 elementary schools, 8 K-8th grade schools, 8 middle schools, 12 high schools, and 5 other schools. SJUSD has an expenditure budget of over \$387 million and employ more than 5,000 staff. The district serves a 75-square mile area covering the communities of Arden-Arcade, Carmichael, Citrus Heights, Fair Oaks, Gold River, and Orangevale (San Juan Unified School District 2020).

Library Services

The Sacramento Public Library has 28 branches throughout Sacramento County. The Sacramento Public Library offers both physical books, e-books, audiobooks, resources for parents and children to increase literacy, music labs and music events, and general community gathering spaces.

The closest library branch location to the UC Davis Sacramento Campus is the Colonial Heights branch at 4799 Stockton Boulevard, approximately 1.8 miles south. The Ella K. McClatchy branch, at 2112 22nd Street, is approximately 2 miles northwest of the Sacramento Campus.

3.13.2 Environmental Impacts

This section describes the environmental impacts associated with public services that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

This analysis evaluates the potential for adverse physical impacts related to the provision of new or altered public service facilities resulting from implementation of the 2020 LRDP Update, including facilities or facility expansions needed to accommodate increases in demand for services and service personnel, or to enable service providers to maintain level of service standards. Increased demand for public services that would result from implementation of the 2020 LRDP Update is determined by comparing projected population growth with existing service ratios, response times, capacities, and/or other performance objectives identified for each service to determine whether there would be unmet need. An unmet need for services could indicate that new facilities would be needed or that additional staff would be needed, which could result in a need for expanded facilities. Parks are analyzed in Section 3.14, *Recreation*, of this Supplemental EIR. In general, population growth analyzed for these purposes focuses on the increased staff, faculty, and student populations as the increased patient and visitor population is assumed to be already living in the Sacramento region.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or creation of a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to

maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

- Fire protection
- Police protection
- Schools
- Parks
- Other public facilities

Impacts and Mitigation Measures

Impact LRDP-PS-1: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for fire protection facilities

The implementation of the 2020 LRDP Update would not modify existing service area boundaries; however, increased population and development could increase demand for fire services. This increase in demand would not result in the need for additional fire protection facilities as described in more detail below. Therefore, this impact would be **less than significant**.

The UC Davis Sacramento Campus is currently served by SFD, with an average emergency response time of approximately 6 minutes (City of Sacramento Fire Department 2018). The 2020 LRDP Update would result in an increase in new structures and additional population on campus including some residents of the Aggie Square Phase I project. The total population increase is expected to be approximately 7600 residents, students, and employees. The project would not increase the service area of the SFD and new structures would be located within the existing Sacramento campus.

According to the SFD, the trigger for additional resources, including services, equipment, personnel, or facilities, is 16,000 residents. The residential population associated with 2020 LRDP Update would be the 411 anticipated residents of Aggie Square Phase I. This increase in residents, and even the increase in daily population, is less than the amount that would require the need for additional facilities (Kunson pers. comm.). Furthermore, all new buildings would be designed, plan-checked, and built to be consistent with all applicable codes, including the CBC, which include fire prevention and suppression measures to reduce the risk of fire. Therefore, the impact on fire facilities resulting from the implementation of the 2020 LRDP Update would be **less than significant**.

Potential new or expanded land uses under the 2020 LRDP Update would increase the daily onsite campus population, which would result in some additional faculty and staff living in the surrounding communities as well as on campus (refer to Section 3.12, *Population and Housing*, of this Supplemental EIR). The increased daily population associated with the UC Davis Sacramento Campus (i.e., patients, visitors, faculty, staff, and students) would likely reside in multiple communities in the Sacramento metropolitan region, as does the current campus population. Increases from the daily onsite and offsite demand for public services, including fire facilities, as a result of these faculty, staff, student, patient and visitor increases would be addressed as part of general plan implementation for the respective jurisdiction (e.g., the cities of Sacramento, West Sacramento, Rancho Cordova, Elk Grove, Roseville).

The impact on fire facilities resulting from implementation of the 2020 LRDP Update would be **less than significant**. The 2010 LRDP Final EIR found that this impact would be less than significant and the 2020 LRDP Update would not result in a new or more severe impact.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-PS-2: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for police protection facilities

The 2020 LRDP Update would result in an increase in the daily onsite population of staff, faculty, students, patients, visitors, and residents. The population increase would likely result in the need for additional police services on the Sacramento Campus. However, a small increase in officers would not require new facilities. Therefore, this impact would be **less than significant**.

The UC Davis Police Department provides law enforcement on campus and would continue to provide these services with implementation of the 2020 LRDP Update. The Aggie Square Phase I Project may include additional square footage to accommodate additional police staffing, as needed. The Department does not currently rely on any level of service standard but has indicated that it would like to meet a staffing ratio of 1 officer to 1,000 members of the campus population. At this level, the Department would need to hire seven or eight additional officers to adequately serve the projected 2040 campus population of 21,199 (including students, UC employees, non-UC employees, and dependents residing in future on-campus housing). To meet the increased service demand, additional police staffing may be required, and additional staffing could necessitate additional building space for the police functions on campus. The additional space to house campus police is a component of the additional square footage that is proposed under the 2020 LRDP Update, and therefore the impacts of such construction are included in the various impact discussions in this Supplemental EIR, including Sections 3.1 *Aesthetics*, 3.2 *Air Quality*, 3.3 *Biological Resources*, 3.4 *Archaeological, Historical, and Tribal Cultural Resources*, and 3.11, *Noise*. Funding and planning for additional staff members is carried out through UC Davis's capital planning process. As described in Chapter 1, *Introduction*, capital planning is a continuous and iterative process that evaluates capital needs identified and assesses alternatives to meet such needs in the context of anticipated capital resources.

Similar to fire protection services, increases in Sacramento Campus faculty and staff would likely result in a commensurate increase in the population of nearby local communities. Increases in the demand for public services, including police facilities, as a result of these faculty and staff increases would be addressed as part of general plan implementation for the respective jurisdiction (e.g., the cities of Sacramento, West Sacramento, Rancho Cordova, Elk Grove, Roseville) through the imposition of development impact fees and tax revenue. Continual collection of such fees and taxes would ensure that the current level of police protection services would be maintained in those jurisdictions. The demand for SPD services would be less than significant with implementation of the 2020 LRDP Update.

The 2010 LRDP Final EIR found that impacts on police protection facilities would be less than significant because as the new population affiliated with the Sacramento Campus would be dispersed throughout the city, even though police officers would need to be added, a new police

station would not likely be constructed to serve this new population. While implementation of the 2020 LRDP Update could result in the need for seven or eight additional Department staff members, this increase would not necessitate the need for new or additional police facilities. As new facilities would not be required, there would not be any significant environmental impacts from facility construction. Therefore, this impact would be **less than significant**.

The 2010 LRDP Final EIR found that this impact would be less than significant and the 2020 LRDP Update would not result in a new or more severe impact.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-PS-3: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for school facilities

Because of the dispersal of the population affiliated with the Sacramento Campus, the population increase resulting from implementation of the 2020 LRDP Update would not result in a substantial increase in enrollment in any one school district. No new facilities would be needed; therefore, this impact would be **less than significant**.

Implementation of the 2020 LRDP Update would increase the number of students, faculty, and staff at the UC Davis Sacramento Campus. Because UC Davis Sacramento Campus employees and students reside in communities throughout the Sacramento region and are not necessarily concentrated near the campus, their own school-age children and families would use school services of all levels (elementary, middle, and high school) provided by various school districts throughout the region. As noted above, SCUSD serves the study area and is the 10th largest public K–12 district in California and one of the oldest in the western United States (established in 1854). As an open enrollment district, parents have many choices for their children’s education. SCUSD serves 46,933 students (2018–2019 enrollment) on 76 campuses, which include quality neighborhood schools and sought-after specialty programs (Ed-Data 2020). Enrollment in the 2014–2015 school year was 46,868, which was an increase of just 65 students or 0.1 percent over the 5-year period.

SCUSD’s student generation rate analysis finds that a new multi-family unit would generate an average of 0.19 students in K–6th grade, 0.03 students in 7th–8th grade, and 0.04 students in 9th–12th grade (Board of Education Sacramento City Unified School District 2012). The number of units assumed for this analysis is 499, which accounts for 324 units associated with the Aggie Square Phase I project, and another 175 units that could be built on campus between 2030–2040. Using these student generation rates, the housing associated with the 2020 LRDP Update would generate approximately 95 students in grades K–6, 15 students in grades 7–8, and 20 students in high school. The increase in school-age students affiliated with residents, and new staff, faculty, and Graduate students on campus with implementation of the 2020 LRDP Update would not result in a need for new or expanded school facilities in any one district.

Table 3.13-8. Student Generation

Housing Type	Units	K-6		7-8		9-12	
		Rate	Enrollment	Rate	Enrollment	Rate	Enrollment
Multi-family housing for student families	499	0.19	95	0.03	15	0.04	20

Source: Generation rates from SCUSD (Board of Education Sacramento City Unified School District 2012).

Note: The on-campus residential areas are expected to be predominantly undergraduate student housing, which is expected to be lower than an average family; therefore, this estimate is conservative.

As stated above, there are many schools in the surrounding region and near the UC Davis Sacramento Campus to accommodate the student population increase. Consequently, implementation of the 2020 LRDP Update would not result in a substantial increase in enrollment within any one school district and no new facilities would be needed. Impacts on school facilities would be less than significant because the dispersal of the population affiliated with the Sacramento Campus and the population increase resulting from implementation of the 2020 LRDP Update would not result in a substantial increase in enrollment within any one school district. Therefore, this impact would be **less than significant**. The 2010 LRDP Final EIR found that this impact would be less than significant and the 2020 LRDP Update would not result in a new or more severe impact.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-PS-4: Creation of a need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for other public facilities

The increase in campus population that is expected to occur with implementation of the 2020 LRDP Update could result in an increased demand for public facilities such as libraries. However, this increase in demand is not expected to result in the need for new or expanded public facilities. Therefore, this impact would be **less than significant**.

Sacramento Public Library provides extensive library facilities with its 28 libraries that serve the general public. While the Sacramento Public Library does not have a numeric standard for facilities to population for library facilities, it does have the objective to provide adequate library services to meet public demand. Public libraries typically are built to provide space for future collections. Collections are augmented as new material becomes available, and the collections may be removed when they become outdated. With its extensive existing libraries and ongoing collections updating processes, Sacramento has the capacity to provide library services to serve the UC Davis Sacramento Campus population's needs.

Additionally, because the 2020 LRDP Update would not substantially affect population levels in Sacramento (refer to Impacts 3.13-1 and 3.13-2 above), substantial increased demand for library services in Sacramento is not anticipated to the extent that new library facilities in the city would be necessary. The need for construction of additional library facilities or other governmental facilities as the result of an increase in the UC Davis Sacramento Campus population under the 2020 LRDP Update is not anticipated. Therefore, this impact would be **less than significant**. The 2010 LRDP

Final EIR found that this impact would be less than significant and the 2020 LRDP Update would not result in a new or more severe impact.

Mitigation Measures

No mitigation measures are necessary.

3.14 Recreation

This section describes the regulatory and environmental setting for recreation in the plan area, analyzes effects on recreation that would result from implementation of the 2020 LRDP Update, and provides mitigation measures to reduce the effects of any significant impacts, if applicable. No comments related to recreation were received on the Notice of Preparation.

3.14.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, federal, state, and regional and local regulations, laws, and policies relevant to recreation in the plan area.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, 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.

Federal

There are no federal plans or policies addressing recreation that pertain to the 2020 LRDP Update.

State

Quimby Act

The Quimby Act (California Government Code Section 66477) preserves open space and parkland in urbanizing areas of the state by authorizing local governments to establish ordinances requiring developers of new subdivisions to dedicate land for parks, pay an in-lieu fee, or perform a combination of the two. The Quimby Act provides two standards for the dedication of land for use as parkland. If the existing amount of parkland in a community is 3 acres or more per 1,000 persons, then the community may require dedication based on a standard of 5 acres per 1,000 persons residing in the subdivision. If the existing amount of parkland in a community is less than 3 acres per 1,000 persons, then the community may require dedication based on a standard of only 3 acres per 1,000 persons residing in the subdivision. The Quimby Act requires a city or county to adopt standards for recreational facilities in its general plan's recreation element if it is to adopt a parkland dedication/fee ordinance.

The amount of land dedicated or fees paid is based upon the residential density, which is determined based on the approved or conditionally approved tentative map or parcel map and the average number of persons per household. UC Davis is not subject to Quimby Act requirements because it is not a local government entity. Accordingly, the Quimby standards are used as a guide and not a requirement under the analysis.

Regional and Local

City of Sacramento General Plan

The *Sacramento 2035 General Plan* was adopted in March 2015 and contains the following goals and policies in the Education, Recreation, and Culture element that are relevant to recreation:

GOAL ERC 2.1: Integrated Parks and Recreation System. Provide an integrated system of parks, open space areas, and recreational facilities that are safe and connect the diverse communities of Sacramento.

GOAL ERC 2.2: Parks, Community, and Recreation Facilities and Services. Plan and develop parks, community and recreation facilities, and services that enhance community livability; improve public health and safety; are equitably distributed throughout the city; and are responsive to the needs and interests of residents, employees, and visitors.

Policy ERC 2.2.11: On-site Facilities. The City shall promote and provide incentives such as density bonuses or increases in building height for large-scale development projects to provide on-site recreational amenities and gathering places that are available to the public. (City of Sacramento 2015)

City of Sacramento Parks and Recreation Master Plan 2005–2010

The City of Sacramento's *Parks and Recreation Master Plan* was updated in 2009. The plan provides guidance for the provision of parks, recreation, and related community services and identifies priorities and goals for city decision makers. The *Parks and Recreation Master Plan 2005–2010: 2009 Technical Update* (City of Sacramento 2009) outlines plans for recreation and community services, children's and teen programs, community centers, park planning and development, and related services in support of the goals and policies of the *Sacramento 2035 General Plan* (City of Sacramento 2015).

Environmental Setting

This section includes the environmental setting relevant to recreation in the 2020 LRDP Update plan area.

The UC Davis Sacramento Campus does not contain park facilities for organized, active recreation. The existing campus open space areas provide walking paths, seating areas, and other forms of passive recreation. These areas include Cancer Survivors Park, which was completed in 2002 and lies at the intersection of 2nd Avenue and Stockton Boulevard and includes native plantings, grassy areas, seating, and sculptures. The Sacramento Campus also has courtyards, landscaped walkways, and outdoor art pieces dispersed throughout the campus. These areas are used by employees, patients, and visitors to the hospital, as well as residents from surrounding neighborhoods. In addition, a Student Fitness Center on the campus at 2501 Stockton Boulevard serves the campus's medical, nursing, PA, and part-time MBA students, as well as UCDHS Fitness Center Members affiliated with the medical campus.

Parks and recreational facilities are provided throughout the Sacramento region by local, state, and federal land management agencies. The City has established goals in the 2009 *Parks and Recreation Master Plan 2005–2010* (City of Sacramento 2009) for providing park facilities within the city based on residential population levels. A summary of the City's standards and projections of additional needs is shown in Table 3.14-1. The master plan has not been updated since 2009, and the projected

needs remain the same. Other regional municipalities conduct similar planning efforts for new facilities and are expected to construct new park facilities as the regional population increases.

Table 3.14-1. City of Sacramento Park Needs Projection for 2030

Type of Park	City Goals	Required New Park Acres/ Mileage for 2030
Citywide/Regionally Serving Parks and Open Space	8.0 acres per 1,000 population	1,560 acres
Community Serving Parks	2.5 acres per 1,000 population	488 acres
Neighborhood Serving Parks	2.5 acres per 1,000 population	488 acres
Trails/Bikeways	0.5 mile per 1,000 population	87.5 miles

Source: City of Sacramento 2009.

Sacramento contains over 200 parks totaling approximately 4,343 acres (City of Sacramento 2020). The nearest neighborhood and regional parks to the Sacramento Campus are shown in Table 3.14-2.

Table 3.14-2. Parks near the Project Area

Facility	Location	Distance from Sacramento Campus	Amenities
Neighborhood Parks			
Fourth Avenue Park	4th Avenue and San Jose Way	0.3 mile	Field, basketball court, play structure
McClatchy Park (15.42 acres)	3500 4th Avenue at 33rd Street	0.75 mile	Jogging path, play areas, disk golf course, gardens, basketball courts, baseball fields, tennis courts, skate park, water spray area, picnic areas
Jack Davis Park	15th Avenue and 44th Street	0.7 mile	Play structures and basketball court
Tahoe Park (17.82 acres)	3501 59th Street	0.8 mile	Basketball court, lighted playing fields, play structures, public pool, horseshoes, volleyball area, picnic areas
Greenfair Park	2950 57th Street	0.3 mile	Walking paths, tennis courts, picnic areas
Sierra Vista Park	T Street and 41st Street	0.2 mile	Walking paths
Coloma Park	4623 T Street	0.3 mile	Basketball court, community center, picnic area
Regional Parks			
American River Parkway	32-mile parkway along the American River in Sacramento County	2 miles	Consists of many smaller parks. Boating, picnic areas, nature centers, bicycle and pedestrian trails
Sutter's Landing Regional Park (166.83 acre)	20 28th Street	1.8 miles	Dog park, skate park, boat launch, basketball courts, multi-use trails

3.14.2 Environmental Impacts

This section describes the environmental impacts associated with recreation that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided if applicable.

Methods for Analysis

The following analysis assesses the environmental effects of the 2020 LRDP Update with respect to the existing or currently proposed recreation uses and facilities in the plan area and in Sacramento. This analysis is based on review of existing documents, policies, ordinances, and other regulations pertinent to recreation. The effects on recreational resources were determined by comparing the 2040 population projections (shown in Chapter 2, *Project Description: 2020 LRDP Update*) to available parks and recreational facilities.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Increased use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Impacts and Mitigation Measures

Impact LRDP-REC-1: Increased use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility that would occur or be accelerated

Demand for park and recreational facilities at the UC Davis Sacramento Campus could increase as a result of implementing the 2020 LRDP Update. However, the increased population associated with the Sacramento Campus is expected to be widely distributed; the population would reside in areas already served by parks and would not significantly increase the use of existing park facilities or result in substantial physical deterioration. Therefore, this impact would be **less than significant**.

As stated in Chapter 2, implementation of the 2020 LRDP Update is projected to result in an onsite daily population of 21,199 people by the year 2040. As stated above, most of the onsite daily population would reside throughout the surrounding Sacramento metropolitan area and would not be concentrated in any one area. The increased population associated with the Sacramento Campus would not substantially increase use of park or recreational facilities in any one community because the population would reside in various communities across the Sacramento region and would therefore not affect any one park facility. Although it is likely that increased population would predominantly reside in the Sacramento metropolitan area, employees who move to these and other communities as a result of employment and educational opportunities on campus would take up residence in areas already served by parks. They may also choose to live in existing residential

developments that already have park and recreational facilities or in new residential developments subject to the dedication of land or the institution of park fees.

The 2020 LRDP Update also includes development of up to 499 residential units by 2040, including 324 units associated with Aggie Square Phase I, and an additional 175 units that could be built on campus between 2030–2040. For the purposes of environmental impact analysis, residential occupancy growth between 2031 and 2040 is assumed to be UC Davis Sacramento Campus students and employees and is included as a part of the overall population increase anticipated on campus under the 2020 LRDP Update (Davis pers. comm.).

New residents and the non-residential population would have access to existing on-campus recreational facilities such as walking paths, and campus open spaces. There is a small Student Fitness Center that is accessible for students, faculty and staff. On campus, implementation of the 2020 LRDP Update would result in increased and improved pedestrian paths and designated open space areas that would be used by residents and non-resident employees, students, patients, and visitors. Implementation of the 2020 LRDP Update would meet the demand for open space from residents, non-resident employees, students, patients, and visitors.

New residents are also anticipated to use neighborhood and regional parks and recreational facilities in surrounding communities. As shown in Table 3.14-2 above, within 1 mile of the Sacramento Campus there are five small neighborhood parks with various amenities, and two large neighborhood parks totaling over 30 acres of parkland nearby. New onsite residences would also be within 2 miles of two large regional parks, including the American River Parkway, which is a 32-mile parkway filled with smaller individual parks, water-based recreation, miles of pedestrian and bicycle trails, and other activities. Sutter's Landing Regional Park is also nearby, and totals over 166 acres of parkland with a variety of amenities including river access. New residents anticipated to arrive by 2040 would represent an incremental increase in population using many surrounding neighborhood and regional parks on a given day, and would not result in substantial use or deterioration of these facilities.

Increased onsite daily population would be spread throughout the Sacramento metropolitan region and would not substantially increase use of any one park. Therefore, the impact related to demand for parks and recreational facilities and the potential for deterioration of existing facilities would be **less than significant**.

The 2010 LRDP Final EIR concluded that increased demand for park and recreational facilities would be less than significant. Therefore, the 2020 LRDP Update would not result in a new or more severe impact the previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-REC-2: Construction or expansion of recreational facilities that might have an adverse physical effect on the environment

While the 2020 LRDP Update does include several areas of open space, no construction or expansion of recreational facilities that might have an adverse effect on the environment is proposed. Therefore, there would be **less than significant**.

As stated above, the 2020 LRDP Update includes a population projection of 21,199 by the year 2040. With the exception of approximately 600 residents on-campus, the majority of the onsite daily population would largely reside throughout the Sacramento metropolitan region and would already be served by parks and recreational facilities in those communities. These new on-campus residents would have access to existing on-campus recreational facilities such as the Student Fitness Center and walking paths and open spaces on the Sacramento Campus. Implementation of the 2020 LRDP Update would result in improvements to open space areas such as malls and quads that are designed to include key pedestrian walkways and locations for special events and gatherings. Additional, secondary open spaces would include courtyards near buildings with amenities such as benches and shade to provide outdoor space for patients, visitors, faculty, and staff. Provision of these improvements would not require any major construction. The increased infrastructure that would be provided with implementation of the proposed project would improve the open space infrastructure at the Sacramento Campus and would meet the demand for open space by non-resident employees, students, patients, and visitors.

The on-campus residents would utilize the parks and recreational facilities off-campus as well. The City's standards for park needs per resident (Table 3.14-1) indicates 8 acres of regional parkland per 1,000 population, 2.5 acres of community and neighborhood parks per 1,000 population, and 0.5 mile of trail/bikeways per 1,000 population. The anticipated on-campus residential population is approximately 600 (1.2 residents per unit) which indicates the existing on-campus facilities, neighborhood and regional parks, and trails are more than adequate for serving this increase in the residential population on the Sacramento Campus. As stated above, planning efforts for new facilities occur as population increases, and it is expected that new parks will be constructed as the regional population increases. Therefore, this impact would be **less than significant**.

The 2010 LRDP Final EIR previously disclosed that impacts to recreation would be less than significant. Therefore, the 2020 LRDP Update would not result in a new or more severe impact.

Mitigation Measures

No mitigation measures are necessary.

3.15 Transportation and Circulation

This section describes the regulatory and environmental setting for transportation, circulation and parking in the plan area, analyzes effects on transportation, circulation and parking that would result from implementation of the 2020 LRDP Update, and provides mitigation measures to reduce the effects of any significant impacts, if applicable.

3.15.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, federal, state, and regional and local regulations, laws, and policies relevant to transportation, circulation, and parking in the plan area.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, UC Davis, a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by UC Davis that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the Sacramento Campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts.

The University of California Policy on Sustainable Practices

The University of California (UC) established the UC Sustainable Practices Policy (University of California 2019) effective July 1, 2019 that applies to all campuses and contains the following goals related to reducing vehicle travel.

- The University recognizes that single-occupant vehicle (SOV) commuting is a primary contributor to commute GHG emissions and localized transportation impacts.
 - 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 (campus) 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 campus' Climate Action Plans and/or sustainable transportation policies.

UC Davis Sacramento Long Range Development Plan

The 2010 LRDP includes the following relevant planning principles related to transportation and access for the campus.

- Provide convenient access to and within the campus.

- Create readily identifiable, easily accessible, and conveniently located parking facilities for patients.
- Locate patient destinations along a “Health Sciences Boulevard.”
- Within the areas of the campus for education and research, support a more pedestrian-friendly, auto-free environment similar to a traditional higher education campus, with parking moved to the periphery.
- Support improved transportation options with a particular focus on the commute habits of faculty, staff, and students, by working with Sacramento Regional Transit District (SacRT) to improve bus and light rail service to and near the campus and identify potential improvements to campus-oriented shuttle systems.
- Implement incentives for non-SOV travel, such as discounted transit passes, carpool matching services, preferential parking for carpools, vanpools, and flexible carshare programs.
- Implement parking management policies, such as pricing, to encourage use of non-auto modes.
- Improve pedestrian connections throughout the campus.
 - All areas of the campus improved for better pedestrian access.
 - An open space system of connecting pedestrian malls to provide the backbone of campus circulation.
 - Patient access designed to be clear and convenient, requiring minimal walking and with parking near the hospital and other patient destinations.
- Provide attractive campus entries and edges.
 - Simplify access for patients at all clinical destinations through clear access gateways.
 - Minimize impacts on surrounding neighborhoods by limiting access to the campus from V Street to only one location at 49th Street.
 - Students, faculty, and staff will access destinations and parking via 2nd Avenue, 3rd Avenue, and 4th Avenue, and 49th Street/Broadway to reduce traffic within the campus.
- Continue to plan and operate a sustainable campus.
 - Support alternate modes of transportation to increase mobility choice and reduce VMT and GHGs.

Federal

No federal plans, policies, regulations, or laws related to transportation and circulation apply to the project. However, federal regulations relating to the Americans With Disabilities Act, Title VI, and environmental justice relate to transit service.

State

The State of California has enacted several pieces of legislation that outline the state’s commitment to encourage land use and transportation planning decisions and investments that reduce vehicle

miles traveled (VMT) and contribute to reductions in greenhouse gas (GHG) emissions in line with state climate goals. This legislation includes:

- Assembly Bill (AB) 32 (2006)
- Senate Bill (SB) 375 (2008)
- SB 226 (2011)
- SB 743 (2013)

Assembly Bill 32

AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 also requires that “(a) the statewide GHG emissions limit shall remain in effect unless otherwise amended or repealed; (b) it is the intent of the Legislature that the statewide GHG emissions limit continues in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020; (c) the CARB shall make recommendations to the Governor and the Legislature on how to continue reductions of GHG emissions beyond 2020.”

Senate Bill 375

SB 375 requires metropolitan planning organizations (MPOs) to prepare a Sustainable Communities Strategy (SCS) as part of their regional transportation plans (RTPs). The SCS demonstrates how the region will meet its GHG reduction targets through integrated land use, housing and transportation planning. Specifically, the SCS must identify a transportation network that is integrated with the forecasted development pattern for the plan area and will reduce GHG emissions from automobiles and light trucks in accordance with targets set by the California Air Resources Board (CARB).

In 2017, the State Legislature passed SB 150, which requires CARB to prepare a report beginning in 2018 and every four years thereafter analyzing the progress made by each MPO in meeting regional GHG emission reduction targets.

The Sacramento Area Council of Governments (SACOG) serves as the MPO for Sacramento, Placer, El Dorado, Yuba, Sutter, and Yolo Counties, excluding those lands in the Lake Tahoe Basin. The Sacramento Campus is in Sacramento County and therefore is within the SACOG MPO.

SB 375 also provides streamlining (i.e., limited CEQA review) for certain transit priority projects that are consistent with the SCS.

Senate Bill 226

SB 226 revises the CEQA Guidelines to set forth a streamlined review process for infill projects, including performance standards to determine an infill project’s eligibility for that streamlined review. One of the requirements for streamlined review is that the project be consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a SCS or an alternative planning strategy.

Senate Bill 743

SB 743 creates or encourages several statewide changes to the evaluation of transportation and traffic impacts under CEQA. First, it directs the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to establish new metrics for determining the significance of transportation impacts of projects within transit priority areas (TPAs) and allows OPR to extend use of the new metrics beyond TPAs. In the amended CEQA Guidelines, OPR selected VMT as the preferred transportation impact metric and applied their discretion to recommend its use statewide. The California Natural Resources Agency certified and adopted the amended CEQA Guidelines in December 2018. The amended CEQA Guidelines state that "generally, VMT is the most appropriate measure of transportation impacts" and the provisions requiring the use of VMT shall apply statewide as of July 1, 2020. The amended CEQA Guidelines further state that land use "projects within 0.5 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."

Second, SB 743 establishes that aesthetic and parking impacts of a residential, mixed-use residential, or employment center projects on an infill site within a TPA shall not be considered significant impacts on the environment.

Third, SB 743 added Section 21099 to the Public Resources Code, which states that automobile delay, as described by level of service (LOS) or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment upon certification of the CEQA Guidelines by the California Natural Resources Agency. Since the amended CEQA Guidelines were certified in December 2018, LOS or similar measures of vehicular capacity or traffic congestion are not considered a significant impact on the environment.

Lastly, SB 743 establishes a new CEQA exemption for a residential, mixed-use, and employment center project a) within a TPA, b) consistent with a specific plan for which an EIR has been certified, and c) consistent with an SCS. This exemption requires further review if the project or circumstances changes significantly.

Technical Advisory on Evaluating Transportation Impacts in CEQA

To aid in SB 743 implementation, OPR released a *Technical Advisory on Evaluating Transportation Impacts in CEQA* (Technical Advisory) in December 2018. The Technical Advisory provides advice and recommendations to CEQA lead agencies on how to implement SB 743 changes. This includes technical recommendations regarding the assessment of VMT, thresholds of significance, VMT mitigation measures, and screening thresholds for certain land use projects. Lead agencies may consider and use these recommendations at their discretion.

The Technical Advisory identifies screening thresholds to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study. The Technical Advisory suggests that projects meeting one or more of the following criteria should be expected to have a less-than-significant impact on VMT.

- Small projects—projects consistent with a SCS and local general plan that generate or attract fewer than 110 trips per day.
- Projects near major transit stops—certain projects (residential, retail, office, or a mix of these uses) proposed within 0.5 mile of an existing major transit stop or an existing stop along a high-quality transit corridor.

- Affordable residential development—a project consisting of a high percentage of affordable housing may be a basis to find a less-than-significant impact on VMT.
- Local-serving retail—local-serving retail development tends to shorten trips and reduce VMT. The Technical Advisory encourages lead agencies to decide when a project will likely be local-serving, but generally acknowledges that retail development including stores larger than 50,000 square feet might be considered regional-serving. The Technical Advisory suggests lead agencies analyze whether regional-serving retail would increase or decrease VMT (i.e., not presume a less-than-significant impact).
- Projects in low-VMT areas—residential and office projects that incorporate similar features (i.e., density, mix of uses, transit accessibility) as existing development in areas with low VMT will tend to exhibit similarly low VMT.

The Technical Advisory also identifies recommended numeric VMT thresholds for residential, office, and retail projects, as described below.

- Residential development that would generate vehicle travel exceeding 15 percent below existing residential VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as a regional VMT per capita or as city VMT per capita.
- Office projects that would generate vehicle travel exceeding 15 percent below existing regional VMT per employee may indicate a significant transportation impact.
- Retail projects that results in a net increase in total VMT may indicate a significant transportation impact.

For mixed-use projects, the Technical Advisory suggests evaluating each component independently and applying the significance threshold for each project type included. Alternatively, the lead agency may consider only the project's dominant use.

The Technical Advisory also provides guidance on impacts to transit. Specifically, the Technical Advisory suggests that lead agencies generally should not treat the addition of new transit users as an adverse impact. As an example, the Technical Advisory suggests that “an infill development may add riders to transit systems and the additional boarding and alighting may slow transit vehicles, but it also adds destinations, improving proximity and accessibility. Such development also improves regional vehicle flow by adding less vehicle travel onto the regional network.”

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 study area would need to be approved by Caltrans.

The following Caltrans planning documents emphasize the State of California's focus on transportation infrastructure that supports mobility choice through multimodal options, smart growth, and efficient development.

- *Smart Mobility 2010: A Call to Action for the New Decade* (Smart Mobility Framework) (California Department of Transportation 2010a)
- *Complete Streets Implementation Action Plan* (California Department of Transportation 2010b)

- *California Transportation Plan 2040* (California Department of Transportation 2016a)
- *Strategic Management Plan 2015-2020—2019 Update* (California Department of Transportation 2019a)

Within the study area, Caltrans has developed the following plans and studies that set expectations for the performance of U.S. Route 50 (US 50) and State Route 99 (SR 99).

- *SR 99 & Interstate 5 Corridor System Management Plan* (California Department of Transportation 2009)
- *District System Management and Development Plan, Caltrans District 3* (California Department of Transportation 2013).
- *Transportation Concept Report and Corridor System Management Plan, United States Route 50, District 3* (California Department of Transportation 2014)
- *Transportation Concept Report, State Route 99, District 3* (California Department of Transportation 2017)

Local Development – Intergovernmental Review Program Interim Guidance

Caltrans' *Local Development – Intergovernmental Review Program Interim Guidance* (Interim Guidance) (California Department of Transportation 2016b) guides the evaluation of traffic impacts to State highway facilities. Specifically, the Interim Guidance identifies “the ‘top six’ elements to emphasize when reviewing development plans and project proposals for transportation impacts.” These six elements are listed below.

- Comment on vehicle miles traveled (VMT) associated with the project.
- Rather than providing recommendations that primarily accommodate motor vehicle travel, provide recommendations that strive to reduce VMT generation, improve pedestrian, bicycle, and transit service and infrastructure, and do not induce additional VMT.
- Focus on travel efficiency.
- Remain neutral on project purpose while framing recommendations for mitigation of the project's impacts within statewide policy.
- Be collaborative; create paths for workable solutions and overcome roadblocks.
- Comments related to impacts to the SHS will be focused on VMT impacts not delay or effects on road capacity.

Transportation Impact Study Guide—VMT-Focused Draft

The Interim Guidance also states that it “will remain in effect until superseded by Caltrans *Transportation Impact Study Guide* (TISG), currently under development.” As of June 2020, the TISG has not yet been adopted. However, the Draft VMT-Focused TISG was released for public review on February 28, 2020. The Draft VMT-Focused TISG outlines how Caltrans will review land use projects with a focus on supporting state land use goals, state planning priorities, and GHG emission reduction goals; the Draft VMT-Focused TISG will also identify land use projects' possible transportation impacts to the SHS and potential non-capacity increasing mitigation measures.

The Draft VMT-Focused TISG emphasizes that VMT analysis is Caltrans' primary review focus, and references OPR's Technical Advisory as a basis for the guidance in the TISG. Notably, the Draft VMT-

Focused TISG recommends use of the recommended thresholds in the Technical Advisory for land use projects. The Draft VMT-Focused TISG also references the Technical Advisory for screening thresholds that would identify projects and areas presumed to have a less-than-significant transportation impact. Caltrans supports streamlining for projects that meet these screening thresholds because they help achieve VMT reduction and mode shift goals.

Regional and Local

Sacramento Area Council of Governments

SACOG is the MPO governing the six-county Sacramento region consisting of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties and their 22 cities. SACOG is responsible for the preparation of, and updates to, the *Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) (Sacramento Area Council of Governments 2019) and the associated Metropolitan Transportation Improvement Program (MTIP) for the six-county region. The SACOG 2020 MTP/SCS provides a 20-year transportation vision and corresponding list of transportation projects. The MTIP identifies short-term projects (i.e., project with a 7-year horizon) in more detail. The current SACOG 2020 MTP/SCS was adopted by the SACOG board on November 18, 2019.

The SACOG 2020 MTP/SCS (Sacramento Area Council of Governments 2019) provides the basis for air quality conformity findings related to the national Clean Air Act and determinations of whether the region is complying with GHG reduction targets for automobiles and light trucks established under SB 375. Major projects that are inconsistent with the plan could jeopardize the plan's effectiveness for air pollution and GHG reduction. Consequently, consistency with the MTP/SCS is a potential basis for determining adverse impacts related to these environmental topics.

The SACOG 2020 MTP/SCS acknowledges that "a more compact land development pattern and providing alternatives to driving alone are critical strategies for reducing the amount of driving we do in our daily lives. Location within the region is likely the most important variable in determining how much time people spend in their vehicles. Communities within existing urban areas, and with a mix and density of uses, tend to produce less VMT per resident than places that are farther away and spread out. These 'lower VMT' areas also tend to have the density and mix of uses to support better transit service and are friendlier to biking and walking for some trips." To this end, the SACOG 2020 MTP/SCS includes two figures showing the distribution of VMT generation in the SACOG region presented in VMT per capita. One figure presents the VMT generation for the base year (2016) and one presents the VMT generation in the horizon year of the MTP/SCS (2040). These maps are presented on the following pages as Figure 3.15-1 and Figure 3.15-2.

As shown in these figures, the Sacramento Campus is in a low-VMT generating area, where VMT per capita levels measure between 50 and 85 percent of the SACOG regional average.

City of Sacramento 2035 General Plan

On March 3, 2015, the City of Sacramento City Council adopted the *Sacramento 2035 General Plan* (City of Sacramento 2015). The Mobility Element of the *Sacramento 2035 General Plan* outlines goals and policies that coordinate the transportation and circulation system with planned land uses. The following policies from the Mobility element of the *Sacramento 2035 General Plan* apply to this analysis.

Policy M 1.2.3: Transportation Evaluation. The City shall evaluate discretionary projects for potential impacts to traffic operations, traffic safety, transit service, bicycle facilities, and pedestrian facilities, consistent with the City's Traffic Study Guidelines.

Policy M 1.2.4: Multimodal Access. The City shall facilitate the provision of multimodal access to activity centers such as commercial centers and corridors, employment centers, transit stops/stations, airports, schools, parks, recreation areas, medical centers, and tourist attractions.

Policy M 1.3.1: Grid Network. To promote efficient travel for all modes, the City shall require all new residential, commercial, or mixed-use development that proposes or is required to construct or extend streets to develop a transportation network that is well-connected, both internally and to offsite networks preferably with a grid or modified grid-form.

Policy M 1.4.2: Automobile Commute Trip Reduction. The City shall encourage employers to reduce the number of single-occupant vehicle commute trips to their sites by enforcing the existing trip reduction ordinance in the City Code.

Policy M 3.3.4: Private Shuttle Services. The City shall support the integration of privately- operated shuttle services into the transportation system that complement existing public bus and rail transit service.

Policy M 4.1.1: Emergency Access. The City shall develop a roadway system that is redundant (i.e., includes multiple alternative routes) to the extent feasible to ensure mobility in the event of emergencies.

Policy M 4.2.1: Accommodate All Users. The City shall ensure that all new roadway projects and any reconstruction projects designate sufficient travel space for all users including bicyclists, pedestrians, transit riders, and motorists except where pedestrians and bicyclists are prohibited by law from using a given facility.

Policy M 4.3.1: Neighborhood Traffic Management. The City shall continue wherever possible to design streets and approve development applications in a manner as to reduce high traffic flows and parking problems within residential neighborhoods.

Policy M 4.4.2: Transportation Performance Metrics. The City shall apply appropriate transportation performance metrics and thresholds in a manner consistent with State law and the community values expressed in the goals and policies of this general plan when measuring transportation system impacts for subsequent projects, making General Plan consistency determinations, and developing transportation financing programs. (City of Sacramento 2015)

Environmental Setting

This section identifies all pertinent changes to the environmental setting relevant to transportation, circulation and parking in the 2020 LRDP Update plan area since publication of the 2010 LRDP Final EIR.

Roadway System

The Sacramento Campus is centrally located in the Sacramento metropolitan area with access to three of the region's major freeways: US 50, SR 99, and the Capital City Freeway (also known as Business 80). These roadways are within 1.25 miles of campus. The key roadways in the study area are described below.

Regional Roadways

Regional access to the Sacramento Campus is provided by US 50, SR 99, and the Capital City Freeway. Local freeway access is primarily provided by the US 50 interchange at Stockton Boulevard

and the westbound off-ramp at 34th Street. Additional freeway access points in the study area include the US 50 interchanges at 59th and 65th Streets, the SR 99 interchanges at Broadway, 12th Avenue, and Martin Luther King Jr. Boulevard, and the Capital City Freeway interchange at P Street.

US 50 is a cross-country east-west highway that provides regional access in the Sacramento region. Locally, US 50 connects the study area to Yolo County to the west and Rancho Cordova, Folsom, and El Dorado County to the east. In the study area, US 50 is a limited-access freeway and generally consists of eight travel lanes of four mixed-flow lanes in each direction.

SR 99 is a north-south state highway that connects the study area to South Sacramento and Elk Grove to the south. In the study area, SR 99 is a limited-access freeway and generally consists of eight travel lanes of four mixed-flow lanes in each direction.

Capital City Freeway is an east-west business loop that consists of two distinct segments in the study area. West of the US 50/SR 99 Oak Park interchange, it is co-signed with US 50 and extends westerly into West Sacramento. East of the US 50/SR 99 Oak Park interchange, it is also known as SR 51 and extends northeasterly toward the unincorporated Arden-Arcade and Carmichael communities in Sacramento County.

Local Roadways

Stockton Boulevard is a north-south roadway that runs from Alhambra Boulevard north of the Sacramento Campus to Power Inn Road in South Sacramento. Beyond Alhambra Boulevard, Stockton Boulevard becomes P Street, which extends westerly to Capital City Freeway and grid of Central City Sacramento. It is a four-lane divided roadway with a posted speed limit of 30 to 35 miles per hour (mph) adjacent to the campus with a striped median serving as a center two-way left-turn lane along the campus frontage. North of the campus, Stockton Boulevard serves as the primary access route to US 50 and Capital City Freeway at the P Street interchange.

T Street is an east-west roadway that serves the Elmhurst neighborhood to the north of the campus. It extends from Alhambra Boulevard to Kroy Way just west of 65th Street. It also serves as the primary connection from the US 50 34th Street off-ramp to Stockton Boulevard.

V Street is an east-west roadway that extends from Stockton Boulevard to 57th Street. Within the study area, V Street is a two-lane roadway that forms the northern boundary of the Sacramento Campus. It serves the Elmhurst residential neighborhood to the north of the campus.

X Street is an east-west campus roadway that extends from Stockton Boulevard to 48th Street. X Street is a divided four-lane roadway and serves as one of the main roadways to access campus facilities from Stockton Boulevard.

Y Street is an east-west roadway that extends from Stockton Boulevard to 45th Street, then as a campus roadway from 48th Street to 49th Street. Y Street provides one travel lane in each direction. It serves as one of three main roadways to access campus facilities from Stockton Boulevard.

2nd Avenue is an east-west roadway that extends from Riverside Boulevard in Land Park to 50th Street on the eastern side of the Sacramento Campus. In addition to serving as one of the main roadways to access campus facilities from Stockton Boulevard, 2nd Avenue provides access to Oak Park, Curtis Park, and Land Park to the east, and is one of several routes between the campus and the SR 99/Broadway interchange.

3rd Avenue is a minor east-west roadway that extends west from Stockton Boulevard approximately 550 feet to 43rd Street. It is proposed to be extended easterly from Stockton Boulevard onto the Sacramento Campus as part of the 2020 LRDP Update.

Broadway is an east-west arterial roadway that extends from I-5 south of Downtown Sacramento to 65th Street. East of Stockton Boulevard, Broadway is a two-lane roadway with a posted speed limit of 30 mph that serves both commercial and residential uses. West of Stockton Boulevard, Broadway is a four-lane roadway with a posted speed limit of 35 mph.

45th Street is a north-south two-lane campus roadway that extends from 2nd Avenue to just north of X Street. 45th Street is proposed to extend southerly to 3rd Avenue as part of the 2020 LRDP Update, as well as be the location of a mobility hub north of 2nd Avenue.

48th Street is a north-south campus roadway that extends from X Street to 2nd Avenue. It is a four-lane divided roadway with a raised median. It also provides access to Parking Lot 4 north of X Street as a two-lane roadway.

49th Street is a north-south roadway that extends from V Street to Broadway along the eastern side of the Sacramento Campus. In the study area, 49th Street is a two-lane roadway with on-street parallel parking.

Campus Travel Characteristics

The following section summarizes information that influences and describes existing campus travel behavior, including the existing campus land uses and traffic volumes at campus gateways.

Existing Campus Land Uses

The Sacramento Campus consists of a mix of medical, education, and employment uses with some complementary supporting uses, such as utility plants, facilities buildings, and lodging options for visitors and family members of patients. Table 3.15-1 lists existing land uses on the Sacramento Campus.

Table 3.15-1. Existing Sacramento Campus Land Uses

Land Use	Baseline (2019)	
	Floor Area (gsf)	Units
Hospital	1,665,949	645 beds
General Office	599,502	–
Medical Office	568,352	–
Research and Development	366,660	–
University	251,722	1,902 students
Industrial/Support	79,388	–
Health Club	3,339	–
Hotel/Lodging	134,899	209 rooms
Total	3,669,811	

Source: Air Quality Analysis Inputs, ICF.

gsf = gross square feet.

Figure 3.15-3 illustrates the location of the Sacramento Campus in relationship to adjacent neighborhoods and key transportation facilities. The campus is in an established area of Sacramento just south and east of the Central City grid along Stockton Boulevard. It is bordered by the Oak Park neighborhood to the west, the Elmhurst neighborhood to the north, and the Tahoe Park neighborhood to the east and south. As described below, this established and central location in the region provides access to multiple mobility choices.

Campus Gateways

The primary vehicular access points to the campus are listed below.

- Stockton Boulevard at Colonial Way (Parking Structure 1)
- Stockton Boulevard at X Street
- Stockton Boulevard at 2nd Avenue
- Broadway at 50th Street
- V Street at 49th Street

After adoption of the 2010 LRDP, previous roadway connections to the Elmhurst neighborhood at 45th and 48th Streets were closed to vehicle traffic and remain as emergency vehicle access only. This has left a single northerly connection from the campus to the Elmhurst neighborhood at 49th and V Streets.

Table 3.15-2 summarizes the vehicle, bicycle, and pedestrian volumes traveling through campus gateways during the morning and evening peak hours. These volumes are based on counts collected at campus gateway locations in October 2019.

Table 3.15-2. Sacramento Campus Daily Trip Generation – Observed

	Vehicles		Bicycles		Pedestrians	
	Morning Peak Hours	Evening Peak Hours	Morning Peak Hours	Evening Peak Hours	Morning Peak Hours	Evening Peak Hours
Campus Entry/Exit						
Colonial Way east of Stockton Boulevard	265	236	6	4	8	8
PS 3 east of Stockton Boulevard ^a	4	5	1	0	–	–
X Street east of Stockton Boulevard	770	761	14	4	135	132
Y Street east of Stockton Boulevard	228	136	2	1	14	14
Parking Lot 10 driveway ^b	90	59	–	–	47	26
2nd Avenue east of Stockton Boulevard	612	584	11	21	77	32
Parking Lot 16 north driveway	120	146	0	2	77	70
Parking Lot 16 south driveway	148	87	3	2	0	0
Governor's Hall west driveway ^c	52	39	–	–	–	–
Governor's Hall east driveway ^c	3	4	–	–	–	–
49th Street north of Broadway	649	345	2	6	33	9
50th Street north of Broadway	470	511	10	13	57	36
49th Street south of V Street	612	622	22	21	28	26
48th Street bicycle path south of V Street ^d	–	–	27	21	84	59
45th Street south of V Street ^d	–	–	17	16	47	38
Total	4,023	3,535	115	111	607	450

PS 3 = Parking Structure 3

^aTraffic counts at the PS3 driveway did not include pedestrian volumes entering or leaving the campus. Inbound vehicle traffic lane from Stockton Boulevard was closed during the data collection period.^bParking Lot 10 driveway did not include bicycle volumes.^cGovernor's Hall driveways did not include bicycle or pedestrian volumes.^d45th and 48th Streets south of V Street do not provide access to vehicles.

The data presented in Table 3.15-2 indicate that vehicles compose more than 85 percent of trips through the campus gateways, while pedestrians compose about 12 percent and bicycles compose a little less than 3 percent of trips through campus gateways. While these data provide a snapshot of the travel mode for trips traversing the campus gateways, they should not be construed as an accurate representation of the mode share for trips generated by the Sacramento Campus. As shown in Table 3.15-2, this is not a comprehensive data set with count data for all modes at the campus gateways; however, bicycle and pedestrian volumes at parking lot driveways are likely to be low. Furthermore, some of the campus gateway locations presented in Table 3.15-2 serve pass-through traffic that are not traveling to or from the Sacramento Campus. For example, travelers moving from the Elmhurst neighborhood to Stockton Boulevard may use 49th Street between V Street and Broadway. Similarly, 49th and 50th Streets north of Broadway also provide access to non-UC Davis Sacramento facilities, such as the California Department of Justice building and Language Academy of Sacramento. Lastly, pedestrian volumes are likely composed of people walking to transit stops, people walking to personal vehicles that may be parked in an adjacent neighborhood, and recreational pedestrian trips. Therefore, the higher pedestrian volume is likely not indicative of a higher pedestrian mode share, but a combination of transit, pedestrian, and even vehicle trips. It is also important to note that UC Davis Health has not conducted a recent survey of existing providers, employees, or students to quantify existing commute travel modes; therefore, this analysis does not

have survey data or other data observations to confirm the modality of trips to and from the Sacramento Campus.

Vehicle Travel

The following describes the baseline VMT levels in the study area. In addition to the 2016 and 2040 VMT per-capita maps prepared for the SACOG 2020 MTP/SCS (Figures 3.15-1 and 3.15-2, respectively), SACOG prepared draft maps that present 2016 workplace-based VMT per job and 2016 total household VMT per capita for the SACOG region (Sacramento Area Council of Governments 2016a, 2016b). These draft maps are based on outputs from the SACSIM 2016 base year travel forecasting model. SACSIM is an activity/tour-based model that simulates individuals' daily travel accounting for land use, transportation, and demographic factors that influence peoples' travel behavior. SACOG recently updated SACSIM as part of its 2020 MTP/SCS. As part of this update, SACOG conducted a validation and calibration of the SACSIM 2016 base year travel model that included using household travel surveys, transit boarding data, on-board transit surveys, traffic count data, and VMT estimates from annual Highway Performance Monitoring Systems (HPMS) data to verify the SACSIM model reasonably replicated actual travel behavior.

The SACOG maps present 2016 baseline VMT data using "hex" geography, or hexagon-shaped tiles, across the SACOG region. The hex geography does not follow jurisdictional boundaries, roadway alignments, or other political or geographic features. Therefore, this hex geography does not perfectly coincide with the Sacramento Campus boundaries. The hex that generally represents a large portion of the campus (i.e., east of Stockton Boulevard between V Street and 2nd Avenue) also includes adjacent uses that are outside the Sacramento Campus (e.g., the California Department of Justice building north of Broadway between 49th and 50th Streets) while excluding portions of the Sacramento Campus that fall outside the hex.

The SACOG maps present workplace-based VMT per job and total household VMT per capita for each hex in the region. The maps also present the region, county, and jurisdiction averages for workplace VMT per job and total household VMT per capita for reference. The map uses a range of colors to compare the VMT characteristics of each hex to the regional average, with cooler colors (e.g., blue, green, and yellow) representing VMT values that are below the regional average and warmer colors (e.g., orange, pink, and red) representing VMT values that are above the regional average. Figure 3.15-4 and Figure 3.15-5 present example screenshots of these maps.

Workplace VMT per job and household VMT per capita are a subset of total VMT generated by the project. Workplace VMT accounts for the vehicle trips and trip lengths associated with work-based tours and sub-tours (i.e., trips made as part of one's commute from home to work (including intermediate stops, such as a coffee shop or gas station) or trips made to or from the workplace during the workday). Household VMT per capita is calculated by tallying all household VMT generated by residents living in the hex (i.e., only trips by residents). The transportation impact analysis focuses on these two VMT metrics, per the Technical Advisory guidance for analyzing VMT impacts of employment and residential uses.

The average workplace VMT per job is computed by summing the VMT from all work-based tours and sub-tours at a workplace located in the hex. This workplace VMT is then divided by the jobs in the hex available for residents inside the SACOG region. Similarly, the average household VMT per capita is calculated by tallying all household VMT generated by residents living in the hex and dividing that value by the total population living in the hex. This methodology does not account for vehicle travel that occurs outside the SACOG region (i.e., trips by residents or workers of the SACOG

region that occur outside the SACOG region). At the time of this analysis, these maps are presented in draft form, are provided for informational purposes only, and are subject to change as guidelines are updated and as SACOG data are updated.

Figure 3.15-4 presents a screenshot of the SACOG Work-Tour VMT map with the hex generally representing the Sacramento Campus highlighted. Table 3.15-3 presents the average workplace VMT per job for this hex that includes a large portion of the Sacramento Campus, along with the average workplace VMT per job for the SACOG region, Sacramento County, and City of Sacramento.

Table 3.15-3. Baseline Workplace VMT per Employee

Geography	Baseline Workplace VMT per Employee (2016)
Sacramento Campus ^a	14.82
SACOG region	18.33
County of Sacramento	17.40
City of Sacramento	16.78

Source: 2016 Work-tour VMT, Sacramento Area Council of Governments 2020. <https://arcg.is/0yi48D0>.

^a Value presented for the Sacramento Campus is for the hex that generally represents the majority of the Sacramento Campus. This likely includes adjacent uses that are outside the Sacramento Campus and excludes certain portions of the campus that fall outside the hex.

Figure 3.15-5 presents a screenshot of the SACOG total residential VMT map with the hex generally representing the Sacramento Campus highlighted. Table 3.15-4 presents the average household VMT per capita for this hex that includes a large portion of the Sacramento Campus, along with the average household VMT per capita for the SACOG region, Sacramento County, and City of Sacramento.

Table 3.15-4. Baseline Total Household VMT per Capita

Geography	Baseline Household VMT per Capita (2016)
Sacramento Campus ^a	11.29
SACOG region	17.91
County of Sacramento	15.91
City of Sacramento	14.25

Source: Sacramento Area Council of Governments 2019.

^a Value presented for the Sacramento Campus is for the hex that generally represents the majority of the Sacramento Campus. This likely includes adjacent uses that are outside the Sacramento Campus and excludes certain portions of the campus that fall outside the hex.

As shown in Figure 3.15-4, both the hex highlighted in the figure and the adjacent hex to the west, which includes the main hospital section of the Campus (i.e., immediately east of Stockton Boulevard and north of X Street), are green indicating that workplace VMT per employee for these locations are 15 percent or more below the existing regional average VMT per employee. Almost the entire Sacramento Campus is within these two hexes. A small sliver of the Sacramento Campus fronting Stockton Boulevard north of Broadway is in a third hex, which primarily represents the area west of Stockton Boulevard between 2nd Avenue and 8th Avenue to the southwest of the campus. While this hex is pink in Figure 3.15-4, indicating a workplace VMT per employee greater than the regional average VMT per employee, this hex primary consists of uses outside the Sacramento Campus that generate higher workplace VMT per employee, according to the SACOG data. Since the two hexagons

that represent the vast majority of the Sacramento Campus generate workplace VMT per employee at a rate 15 percent or more below the regional average VMT per employee, the SACOG data demonstrates the Sacramento Campus is generally in a low-VMT generating area for workplace VMT per employee.

Bicycle Facilities

The *California Highway Design Manual* (California Department of Transportation 2019b) identifies four primary types of bicycle facilities: Class I bicycle paths (including shared use paths), Class II bicycle lanes, Class III bicycle routes, and Class IV separated bikeways. These bicycle facilities are briefly described below.

- Class I (Bicycle Path)—A facility with exclusive right-of-way with cross flows by vehicles minimized. Motor vehicles are prohibited from bicycle paths. Unless adjacent to an adequate pedestrian facility, Class I facilities are for the exclusive use of bicycles and pedestrians.
- Class II (Bicycle Lane)—A dedicated facility for bicyclists adjacent to motor vehicle traffic on streets. They are identified with striping, pavement markings, and signage. The striping on Class II bicycle lanes are intended to delineate the right of way assigned to bicyclists and motorist and to provide for more predictable movements by each.
- Class III (Bicycle Route)—On-street bicycle routes where bicycles and motor vehicles share the road. They are identified with signage and may be also indicated with pavement markings (e.g., sharrows). Class III facilities are intended to provide continuity to other bicycle facilities (usually Class II bikeways) or designate preferred routes through high demand corridors. are typically assigned to low-volume and/or low-speed streets.
- Class IV (Separated Bikeway)—Facility for the exclusive use of bicycles that is separated from adjacent vehicular traffic. The separation may include grade separation, flexible posts, inflexible barriers, or on-street parking. Also referred to as protected bicycle lanes or cycle tracks.

Bicycle activity is facilitated by both on- and off-street bicycle facilities. Figure 3.15-6 shows the existing bicycle facilities on the Sacramento Campus and in the surrounding neighborhoods. As shown in Figure 3.15-6, the existing bicycle network in the study area consists primarily of Class II bicycle lanes and Class III bicycle routes. The Sacramento Campus generally has a connected network of bicycle lanes on 2nd Avenue, 49th Street, and 50th Street. The surrounding neighborhoods feature a mix of well-connected bicycle facilities, such as 2nd Avenue, T Street, V Street, 48th Street, and 51st Street, as well as disjointed bicycle facilities with substantial gaps, such as along Broadway and Stockton Boulevard. Community feedback collected during the preparation of the *City of Sacramento Bicycle Master Plan* (City of Sacramento 2018) noted that the intersection of Stockton Boulevard and Broadway near the southwest corner of the campus is considered a “difficult intersection” for bicyclists, and that Stockton Boulevard from Alhambra Boulevard to Broadway is a primary “gap in the network.”

According to the data in Table 3.15-2, bicycle trips compose about 3 percent of morning and evening peak hour trips at the campus gateways.

Pedestrian Facilities

The Sacramento Campus is a compactly developed site with several medical and educational destinations and parking areas distributed around the campus. This development pattern results in

pedestrian activity on the campus as employees, providers, patients, visitors, and students walk short distances between medical, employment, or education destinations, or from these destinations to parking structures and surface parking lots.

Sidewalks along on-campus and off-campus roadways and internal campus walkways are the primary facilities serving pedestrian travel in the study area. Sidewalks are generally present on both sides of on-campus roadways with few exceptions (e.g., west side of 45th Street between X and Y Streets). Most on-campus intersections feature marked crosswalks across each leg of the intersection. In addition to sidewalks, the campus generally features wide walkways that provide convenient connections from sidewalks to major building entries, such as the main hospital, as well as between buildings such as Moore Hall, the Administrative Support Building, and Education Building.

Sidewalks and marked crosswalks are also generally present on local roadways that connect the campus to nearby destinations and adjacent neighborhoods surrounding the campus. A pedestrian hybrid beacon (PHB) signal is located at the Stockton Boulevard/Sherman Way intersection to facilitate pedestrian movements across Stockton Boulevard.

According to the data in Table 3.15-2, pedestrian volumes compose about 12 percent of morning and evening peak hour trips at the campus gateways. As noted in the review of the campus gateway volumes, pedestrians traversing the campus gateways are likely composed of transit users, people who park in an adjacent neighborhood, and recreational pedestrian trips. Therefore, this 12 percent value is likely not indicative of the pedestrian mode share, but a representative combination of transit, pedestrian, and vehicle trips.

Transit Service and Facilities

Figure 3.15-7 shows existing transit services and facilities in the study area. SacRT is the primary transit operator in the study area. The Causeway Connection, a SacRT and YoloBus service that connects the UC Davis main campus to the Sacramento Campus, started service in Spring 2020. Additionally, UC Davis runs a courtesy onsite shuttle service.

The Sacramento Campus is served by SacRT bus Routes 38 and 51. Route 38 operates between 6:00 a.m. and 9:30 p.m. on weekdays with 1-hour headways. On weekends and holidays, the line runs between 7:30 a.m. and 9:00 p.m. with 1-hour headways. Route 38 serves bus stops along Stockton Boulevard north of Broadway and Broadway west of Stockton Boulevard, generally along the western and southern edges of the campus. Route 51 offers service on weekdays between 6:00 a.m. and 10:00 p.m. with 15-minute headways, on weekends/holidays between 6:00 a.m. and 9:30 p.m. with 20-minute headways. This route runs between downtown Sacramento and Florin Towne Centre serving bus stops by the intersection of Broadway/Stockton Boulevard, which is just southwest of the Sacramento Campus. In February 2020, the maximum peak load experienced by Routes 38 and 51 was 18 and 29 passengers, respectively, during a typical weekday. Routes 38 and 51 generated 12.6 and 25.9 weekday boardings per revenue hour, respectively¹. Route 38 operates at 76.4 percent on-time and Route 51 operates at 73 percent on-time.

SacRT also operates the Gold Line light rail service, which runs between the City of Folsom and downtown Sacramento, parallel to US 50. The Gold Line offers service on weekdays between 5:00 a.m. and 12:30 a.m. and on weekends and holidays between 5:00 a.m. and 10:30 p.m. Headways

¹ Based on February 2020 average weekday ridership data provided by SacRT.

are typically half an hour, except for during weekday peak periods when they are 15 minutes. There are two Gold Line stations near the Sacramento Campus at 39th and 48th Streets. The 39th Street station is co-signed as the UC Davis Health station, as it is served by the UC Davis shuttle (see more details below). In February 2020, the maximum peak load experienced by the Gold Line was 224 passengers during a typical weekday².

The Causeway Connection, funded by UC Davis and jointly operated by SacRT and YoloBus, runs with stops at the UC Davis main campus and the Sacramento Campus. The route operates with zero-emission electric battery buses and offers service on weekdays from 6:00 to 9:00 a.m. and from 4:00 to 6:00 p.m. The headways are 20 minutes during peak periods and hourly during off-peak periods.

In addition to the bus and light rail service provided by SacRT, UC Davis operates a courtesy onsite shuttle service to connect the hospital, clinic and education buildings, parking areas, and other key destinations around the campus. The shuttle service system consists of three lines that operate Monday through Friday from approximately 5:30 a.m. to 5:30 p.m.: the Gold Line, Blue Line, and Green Line. These shuttle lines are shown in Figure 3.15-7. The Gold Line and Blue Line run continuously on approximately 7- to 10-minute headways. The Green Line connects the Sacramento Campus with the 39th Street light rail station on SacRT's Gold Line. The Green Line operates on roughly 20-minute headways from 6:10 a.m. to 5:30 p.m. The primary transit center for the shuttle system is at the main hospital. There are shuttle stops throughout the campus.

As noted in the Regulatory Setting section on page 3.15-3, one of the screening thresholds identified in the Technical Advisory are projects near major transit stations, and specifically, projects within 0.5 mile of an existing major transit stop or an existing stop along a high quality transit corridor. The light rail stations along SacRT's Gold Line light rail transit service are the only transit stops in the study area that qualify as a "major transit stop" per the definition in the CEQA statute (i.e., Public Resources Code, Section 21064.3). Figure 3.15-7 also shows the areas that are within this 0.5 mile buffer of a major transit stop.

Disruptive Trends in Travel

Transportation and mobility are being transformed through a number of forces ranging from new technologies, different personal preferences, and the unique effects of the current coronavirus disease 2019 (COVID-19) pandemic, the combination of which could alter traditional travel demand relationships in the near- and long-term future. These disruptive trends increase uncertainty in forecasting future travel conditions, especially considering that new technologies such as automated vehicles (AVs) may be operating on future networks within the 2040 horizon year of the LRDP. Information about how technology is affecting and will affect travel is accumulating over time.

Furthermore, the current COVID-19 pandemic and subsequent actions by federal, state, and local governments to curtail mobility and encourage physical distancing (i.e., limit in-person economic and social interactions) has temporarily but profoundly changed travel conditions. While travel activity will likely return to some form of normality after government shelter-in-place orders are lifted and the pandemic has concluded, it is possible that some of these temporary changes will influence people's travel choices into the future, including either accelerating or diminishing some of the emerging trends in transportation that were already underway prior to the pandemic. Some of

² Based on February 2020 average weekday ridership data provided by SacRT.

the emergent changes already influencing travel behavior that could accelerate in the future include the following.

- Substituting internet shopping and home delivery for some shopping or meal-related travel.
- Substituting participating on social media platforms for social/recreational travel.
- Substituting telework for in-office work/commute travel.
- Using new travel modes and choices. Transportation network companies such as Uber and Lyft, car sharing, bicycle/scooter sharing, and on-demand micro transit services have increased the options available to travelers in the Sacramento area, and have contributed to changes in traditional travel demand relationships. For example, combined bus and rail ridership on SacRT has declined by approximately 19 percent between 2016 and 2019. The SACSIM model was calibrated to 2016 conditions and may not fully capture all the factors influencing transit ridership declines today or in the future.
- Automation of vehicles. Both passenger vehicles and commercial vehicles and trucks are evolving to include more automation. Research, development, and deployment testing is proceeding on AVs; AVs do not require an operator, and navigate roadways autonomously. Forecasts of how quickly research, development, and deployment testing will transition to full deployment and marketing of AVs vary widely both on the pace of the transition, and the market acceptance of fully automated operation. More uncertainty exists around the behavioral response to AVs. In terms of VMT impacts on the transportation system and the environment, the worst-case scenario would be one in which AVs are privately owned, as they are now, but the automated function of AVs would cause them to be used more as described below.
 - AVs could be repositioned to serve different members of a household (e.g., have an AV drop a worker at their workplace, then drive back home empty to serve another trip such as taking a student school). The repositioning of AVs could add significantly to traffic volumes and VMT.
 - AVs could reduce the value travelers place on time spent in a vehicle, resulting in an increase in willingness to make longer trips. For example, if a person could read or do work in an AV instead of focusing on driving, they might be willing to commute longer distances to work. Conversely, a worker who would prefer to live in a rural area, but is unwilling to drive far enough to act on that preference in a conventional vehicle, may be willing to do so using an AV.
 - AVs could increase willingness to drive more to avoid parking costs or tolls. For example, a person going to a sporting event in an area that charges for parking might use an AV to be dropped off at the venue, and then re-position and park the AV in an area that does not charge for parking.
- Connected vehicles (CVs) can communicate wirelessly with its surroundings, including other vehicles, bicyclists, pedestrians, roadway infrastructure (i.e., traffic signals, toll facilities, and traffic management facilities) and the internet. The influence that CVs may have is still speculative, but includes potential for reductions in collisions and congestion, and greater overall network performance optimization.

3.15.2 Environmental Impacts

This section describes the environmental impacts associated with transportation, circulation, and parking that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided.

Significance Criteria

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities.
- Conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b).
- Substantial increase in hazards because of a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Potential to cause inadequate emergency access.

Thresholds of Significance

This analysis considers the significance criteria obtained from Appendix G to identify refined thresholds of significance for each criterion. These thresholds are identified below.

Conflict with Existing and Planned Facilities

The project would result in a significant transportation impact if it would do any of the following.

- Physically disrupt an existing bicycle facility, pedestrian facility, or transit service/facility.
- Interfere with the implementation of a planned bicycle facility, pedestrian facility, or transit service/facility.
- Cause a degradation in transit service such that service does not meet performance standards established by the transit operator.

Note that the Technical Advisory suggests the addition of new transit riders or incurring additional delay from increased boardings and alightings is not considered an adverse impact. However, maintaining transit level and quality of service is necessary to retain and expand ridership. Failure to meet performance standards established by the transit operator could lead to losses of ridership and increases in travel by other modes (e.g., automobiles), which could result in environmental effects such as increased emissions.

VMT Impacts

CEQA Guidelines Section 15064.3, subdivision (b) outlines criteria for analyzing transportation impacts using VMT. For land use projects, VMT exceeding an applicable threshold of significance may indicate a significant impact.

Neither UC Davis nor the City of Sacramento have formally adopted guidance or thresholds related to VMT impact analysis (i.e., tailored screening criteria, preferred metrics and calculation methods, and use-specific thresholds). Therefore, this analysis relies on guidance from the Technical Advisory.

Per the Technical Advisory, the project would result in a significant impact if it would do any of the following.

- Generate vehicle travel exceeding 15 percent below existing regional household VMT per capita for residential uses.
- Generate vehicle travel exceeding 15 percent below existing regional work VMT per employee for employment uses.
- Include retail development that would result in a net increase in total VMT.

The transportation impact assessment evaluates household VMT per capita for residential uses and work VMT per employee for employment uses for potential VMT impacts per the Technical Advisory as guidance. Household VMT and work VMT are VMT metrics that only capture specific users and/or trip purposes. A separate VMT metric, total VMT, which accounts for all vehicle trips generated by the project and their associated trip length, is used as an input into the air quality, GHG, and energy analyses to determine the impact of the project's mobile emissions, as described in these resource sections. Readers should refer to these other resource sections for more information about how the project's travel characteristics affect those specific topics. Since each chapter is focused on a specific environmental effect with its own specific metrics, thresholds, or significance criteria, it is possible to have a different conclusion for transportation impacts than other resource topics that also reference project-related travel.

Hazards Impacts

The project would result in a significant transportation impact if it would do any of the following.

- Result in a geometric design feature that is inconsistent with applicable design standards.
- Result in a change to the volume, mix, or speed of traffic that is not compatible with the existing facility design.

Emergency Access Impacts

The project would result in a significant transportation impact if it would result in roadway and transportation facilities that impede access for emergency response vehicles.

Construction Impacts

The project would result in a significant transportation impact if construction-related activity would do any of the following.

- Result in hazardous conditions for motorists, bicyclists, pedestrians, or transit users.
- Inhibit access for emergency response vehicles.

Methods for Analysis

The transportation impact analysis methodology includes a combination of quantitative and qualitative evaluations of the transportation system. The specific analysis methods are described below.

Bicycle and Pedestrian Facilities

The impact assessment for bicycle and pedestrian travel considers existing and planned bicycle and pedestrian facilities and reviews the 2020 LRDP Update to determine whether it would physically disrupt an existing facility or prevent the implementation of a planned facility. This assessment also considers whether the project would increase conflicts between bicyclists and pedestrians and other modes of travel.

Transit Service and Facilities

The impact assessment for transit considers existing and planned transit facilities and services, and reviews the 2020 LRDP Update to determine whether it would physically disrupt an existing service or facility or prevent the implementation of a planned service or facility. This assessment also considers whether the project could conflict with transit performance standards established by transit operators.

Future Sacramento Campus transit demand was estimated based on longitudinal employer-household dynamics data, Journey-to-Work Census data, and estimates of campus growth that would result from the 2020 LRDP Update. Generally, transit demand is linked to the availability and quality of transit service in combination with travel distance and the cost of travel (i.e., passenger fare).

The estimated increase in transit demand presumes that future background travel conditions remain relatively constant and does not account for potential changes associated with emerging travel technologies or increased mobility choices. As noted earlier, these emerging travel trends are already contributing to changes in the traditional travel demand relationships, as exemplified in a 19 percent decline in bus and rail ridership on SacRT between 2015 and 2018. Furthermore, the current COVID-19 pandemic and subsequent response by government agencies has reduced transit demand and shared mobility options; it is uncertain how this will translate into longer-term transit demand changes.

Transit performance is measured against performance standards outlined in the SacRT Service Standards document (Sacramento Regional Transit, 2013). The performance standards used in this analysis include:

- Vehicle loading standards
- Productivity standards (headway standard)
- On-time performance standards

VMT Impact Assessment

As discussed above, LOS can no longer be used for evaluating project traffic impacts under CEQA with the passage of SB 743 and adoption of the amended CEQA Guidelines implementing SB 743 (see CEQA Guidelines Section 15064.3). Per CEQA Guidelines Section 15064.3, subdivision (c), the

provisions in Section 15064.3 recommending VMT as the primary metric for analyzing traffic impacts applies as of July 1, 2020.

This analysis relies on guidance provided in the Technical Advisory to assess the project's VMT impact. Specifically, this analysis considers the following.

- Does the project meet one or more of the screening thresholds identified in the Technical Advisory such that a detailed analysis is not necessary?
 - If so, what information or data are available to support the conclusion that the project meets the screening threshold and should be considered to have a less-than-significant transportation impact?
- If the project does not meet one or more of the “screening thresholds,” this analysis would proceed to a detailed analysis of the project's VMT impact. This includes quantifying the project's VMT generation and determining whether this VMT generation would exceed the recommended thresholds of significance in the Technical Advisory (i.e., 15 percent below existing regional VMT per capita/employee).

VMT Screening Analysis

The Technical Advisory identifies “screening thresholds” to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study. As described in the Regulatory Setting section, the Technical Advisory suggests the following projects should be expected to have a less-than-significant impact on VMT.

- Small projects
- Projects near major transit stops
- Affordable residential development
- Local-serving retail
- Projects in low-VMT areas

Of these project types, only the criterion for projects near major transit stops are codified in the updated CEQA Guidelines. The remaining criteria for small projects, affordable residential development, local-serving retail, or projects in low-VMT areas are not codified in the CEQA Guidelines but are suggested by OPR based on research cited in the Technical Advisory.

For mixed-use projects, the Technical Advisory suggests evaluating each component independently and applying the screening threshold for the applicable land use type. The Technical Advisory alternatively suggests that the lead agency may consider only the project's dominant use.

Of these screening criteria, the following potentially apply to development at the Sacramento Campus.

- Projects near major transit stops
- Local-serving retail
- Projects in low-VMT areas

The 2020 LRDP Update does not qualify as a small project for screening purposes, and it is unknown whether all residential units would be restricted as affordable units. Therefore, this Supplemental EIR does not rely on these screening criteria and does not discuss these criteria further.

Presumption of Less-Than-Significant Impact Near Existing Major Transit Stops

CEQA Guidelines Section 15064.3, subdivision (b)(1), states that lead agencies should generally presume projects within 0.5-mile of an existing major transit stop or a stop along an existing high quality transit corridor will have a less-than-significant transportation impact. This presumption assumes development with better access to high quality transit service is likely to result in more transit mode share and a reduction in VMT.

The Technical Advisory states this presumption would not apply “if project-specific or location-specific information indicates that the project will still generate significant levels of VMT. For example, the presumption may not be appropriate if the project has or does any of the following.

- 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 SCS as determined by the lead agency, with input from the MPO.
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

The light rail stations along SacRT’s Gold Line light rail transit service are the only transit stops in the study area that qualify as a major transit stop per the definition in the CEQA statute (Public Resources Code Section 21064.3). Figure 3.15-7 shows the Sacramento Campus and the areas that are within this 0.5-mile buffer of a major transit stop.

As shown in Figure 3.15-7, the northern half of the Sacramento Campus generally north of X Street is within 0.5 mile of a major transit stop (i.e., a SacRT Gold Line light rail transit station). Most of the southern half of the Sacramento Campus generally south of 2nd Avenue is more than 0.5 mile from a major transit stop. While some individual projects contemplated in the 2020 LRDP Update may qualify for this presumption of a less-than-significant impact based on their proximity to the Gold Line light rail stations, not all development on the campus would qualify due to being more than 0.5 mile from a major transit stop.

Presumption of Less-Than-Significant Impact for Local-Serving Retail

The Technical Advisory states that “new retail development typically redistributes shopping trips rather than creating new trips,” and that “local-serving retail development tends to shorten trips and reduce VMT” by “adding retail opportunities into the urban fabric and thereby improving retail destination proximity.” On the other hand, the Technical Advisory notes that regional-serving retail development “can lead to substitution of longer trips for shorter ones” and “may tend to have a significant impact.” The Technical Advisory further states that “retail development including stores larger than 50,000 square feet might be considered regional-serving.”

The 2020 LRDP Update plans for 20,000 gross square feet (gsf) of commercial retail and 20,000 gsf of restaurant space out of the more than 7,000,000 gsf of development at full implementation of the plan (see Table 3.15-5). It is anticipated that this limited amount of commercial retail and restaurant

space will in large part serve the Sacramento Campus population and the immediate surrounding neighborhoods. Therefore, it is reasonable to conclude that the commercial retail and restaurant components of the 2020 LRDP Update would primarily be local-serving in nature.

Presumption of Less-Than-Significant Impact for Projects in Low-VMT Areas

The Technical Advisory states that “residential and office projects that locate in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. Maps created with VMT data, for example from a travel survey or a travel demand model, can illustrate areas that are currently below threshold VMT.” The Technical Advisory goes on to state that “new development in such locations would likely result in a similar level of VMT” and “such maps can be used to screen out residential and office projects from needing to prepare a detailed VMT analysis.”

The SACOG maps presented in Figure 3.15-4 and Figure 3.15-5 show existing (2016) workplace VMT per job and existing (2016) household VMT per capita. These maps were in part prepared for this screening purpose. As described in the Environmental Setting section, these maps color code each hex by comparing the VMT characteristics of each hex to the regional average VMT. Areas colored green and blue are 15 percent or more below the existing regional average VMT per capita/employee. Based on the Technical Advisory threshold recommendations for residential and employment uses, these blue and green hexes would be considered low-VMT areas.

The data presented in Table 3.15-3 show the workplace VMT per employee for the hex that generally represents the Sacramento Campus is approximately 19 percent below the regional average.³ Per the Technical Advisory, workplace VMT per employee should be compared to the geography over which most workers would be expected to live. In most cases, this will be a region, but in some cases, “it might be appropriate to refer to a smaller geography, such as the county, that includes the area over which nearly all workers would be expected to live.” A recent survey of the existing Sacramento Campus workforce is not available to quantify the spatial distribution of existing staff to determine how many staff live in Sacramento County versus the adjacent counties in the SACOG region. However, the Sacramento Campus is less than 4 miles from the Yolo County line and adjacent freeways (i.e., Capital City Freeway and US 50) provide convenient access to adjacent counties in the Sacramento metropolitan area (i.e., Yolo, El Dorado, and Placer Counties). Based on the proximity of these counties, it is conceivable that at least a portion of workers who work in the study area reside outside Sacramento County. Therefore, this analysis compares the workplace VMT per employee for the hex generally representing the campus against the regional average workplace VMT per employee.

The data presented in Table 3.15-4 show the household VMT per capita for this same hex is approximately 37 percent below the regional average and 21 percent below the City average.⁴ Per the Technical Advisory, residential VMT per capita may be measured against the region or city.

The study area can generally be considered a low-VMT area based on these the SACOG maps and confirmed by these calculations.

³ Sacramento Campus = 14.82 VMT per employee; SACOG region = 18.33 VMT per employee. Workplace VMT Regional Average Comparison: $(14.82/18.33) - 1 = -19.1$ percent.

⁴ Sacramento Campus = 11.29 VMT per capita; SACOG region = 17.91 VMT per capita; City of Sacramento = 14.25 VMT per capita. Household VMT Regional Average Comparison: $(11.29/17.91) - 1 = -37.0$ percent. Household VMT City Average Comparison: $(11.29/14.25) - 1 = -20.8$ percent.

Other Impacts

Potential transportation impacts related to transportation hazards, emergency access, and construction activity are based on a review of project changes to the transportation network and a qualitative assessment of whether those changes would conflict with applicable standards or result in detrimental conditions based on the thresholds of significance.

Project Travel Characteristics

The 2020 LRDP Update generally maintains the current campus access and circulation patterns. Primary vehicular access points will remain at the following locations.

- Stockton Boulevard at X Street
- Stockton Boulevard at 2nd Avenue
- Broadway at 50th Street

Additional key access points include Stockton Boulevard at Colonial Way, Stockton Boulevard at Y Street, and V Street at 49th Street. 45th and 48th Streets at V Street remain closed to vehicular traffic.

The proposed Aggie Square development will extend 3rd Avenue easterly from Stockton Boulevard onto the Sacramento Campus. This will provide an additional access point onto the Sacramento Campus, and will primarily serve traffic to and from the Education, Research, and Housing areas of the campus between 2nd Avenue and Broadway.

The 2020 LRDP Update also anticipates the addition of a new mobility hub at 45th Street north of 2nd Avenue which will provide a centralized transit center.

In addition, the 2020 LRDP Update anticipates potential changes in traffic control at several intersections on the campus. This includes reconfiguring the existing traffic circle at X and 48th Streets as a conventional four-leg intersection with a traffic signal, new traffic control devices along 2nd Avenue to facilitate traffic flow and improve pedestrian crossings, and potential driveway turn restrictions to reduce collision potential.

Lastly, excess vehicular capacity on some internal roadways may be addressed by removing through travel lanes and replacing them with either bicycle facilities, on-street parking, and/or curb space for pick-up/drop-off activity, where warranted.

2020 LRDP Update Land Use

The transportation analysis refers to detailed land use inputs that were compiled for the air quality analysis. Table 3.15-5 summarizes the land use inputs associated with each analysis scenario for the transportation analysis.

Table 3.15-5. Sacramento Campus Land Use Inputs—Transportation Analysis Scenarios

Land Use	Scenario							
	Baseline (2019)		Interim Implementation of 2020 LRDP Update (2030)		2040 No Project ^a		Full Implementation of 2020 LRDP Update (2040)	
	gsf	Units	gsf	Units	gsf	Units	gsf	Units
Hospital ^b	1,665,949	645	2,101,572	938	2,686,308	800	2,267,948	1,017
General Office	599,502	–	747,019	–	654,737	–	774,495	–
Medical Office	568,352	–	873,156	–	1,374,582	–	924,493	–
Research and Development	366,660	–	1,893,660	–	1,210,704	–	1,969,220	–
University ^c	251,722	1,902	413,722	2,352	403,568	2,340	434,329	2,832
Industrial/Support	79,388	–	79,388	–	100,000	–	82,823	–
Health Club	3,339	–	13,339	–	6,000	–	16,774	–
Hotel/Lodging ^d	134,899	209	134,899	209	134,899	209	184,899	300
Residential ^e	0	–	283,500	324	0	–	375,020	499
Retail/Market	0	–	20,000	–	0	–	20,000	–
Restaurant	0	–	20,000	–	0	–	20,000	–
Total	3,669,811		6,580,255		6,570,798		7,070,000	

Source: Air Quality Analysis Inputs.

gsf = gross square feet, or total gross floor area for a given land use.

^a 2040 no project conditions reflect full implementation of the 2010 LRDP.

^b Units for hospital = total beds.

^c Units for university = total student population.

^d Units for hotel/lodging = total rooms.

^e Units for residential = total dwelling units.

Impacts and Mitigation Measures

Impact LRDP-TRA-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities

Implementation of the 2020 LRDP Update would increase bicycle and pedestrian travel but would not physically disrupt an existing pedestrian or bicycle facility or interfere with implementation of a planned pedestrian or bicycle facility. Growth associated with the 2020 LRDP Update would increase demand for transit serving the campus by approximately 600 new daily passenger boardings and would also increase peak hour delays for bus transit routes that operate on roadways surrounding the campus, which would adversely affect bus transit operations. This impact would be **significant and unavoidable**.

Bicycle Travel

The 2020 LRDP Update would result in an increase in population at the Sacramento Campus, which will likely increase bicycle use in the project area. As shown in Table 3.15 2, bicycle volumes at campus gateways generally represent 3 percent of total existing trips during the morning and evening peak hours. This indicates existing bicycle demand is relatively low and existing facilities are capable of accommodating increases in bicycle demand.

As part of its ongoing effort to reduce SOV travel, it is likely bicycle use would increase in mode share compared to existing levels. However, as new facilities and population are added to the campus under the proposed 2020 LRDP Update, bicycle facilities would be constructed and enhanced on the campus (Figure 3.15-8). For example, the 2020 LRDP Update includes the addition of bicycle lanes on 48th Street, consistent with the *City of Sacramento Bicycle Master Plan* (City of Sacramento 2018), and a protected intersection is proposed to replace the existing traffic circle at the intersection of X and 48th Streets to facilitate bicycle travel to the Class I shared-use path along the 48th Street alignment between V and X Streets.

The 2020 LRDP Update does not include any changes that would physically disrupt an existing bicycle facility on or off the campus. LRDP policies are in place to reduce the likelihood of multimodal conflicts on campus. Such policies address driveway access design, placement of signage and new pedestrian and bicycle facilities. These policies would be supplemented with the use of best practices to reduce potential conflicts between automobiles and bicycles and between bicycles and pedestrians. Further, implementation of the 2020 LRDP Update would not interfere with the implementation of planned bicycle facilities in the *City of Sacramento Bicycle Master Plan*.

Increased bicycle travel demand generated by the Sacramento Campus may result in additional bicycle trips on local roadways without existing bicycle facilities, such as Broadway and Stockton Boulevard. Additional automobile trips resulting from the implementation of the 2020 LRDP Update would also use these roadways. This could increase potential for conflicts between automobiles and bicycles on these off-campus roadways without dedicated bicycle facilities.

The City of Sacramento is currently conducting the Stockton Boulevard Corridor Study to envision transportation improvements to the corridor. This study intends to propose improvements that support increased transportation choices along the corridor, including promoting walking and bicycling. Data in the *City of Sacramento Bicycle Master Plan* indicate that communities along the Stockton Boulevard corridor exhibit some of the lowest rates of auto ownership as well as some of the greatest bicycle commute mode share in the city, indicating a potential greater reliance and proclivity for bicycling. Therefore, the recommended improvements that are ultimately developed for the Stockton Boulevard Corridor Study are likely to improve bicycle safety and facilitate bicycle travel.

One of the gaps in the bicycling network is along Broadway west of Stockton Boulevard. The City of Sacramento is identifying near-term improvements for this stretch of Broadway as part of the *Vision Zero Top Five Corridor Study* (City of Sacramento 2017). The recommended near-term improvements for Broadway include striping improvements that would reduce the number of vehicle travel lanes on Broadway from four through lanes to two through lanes, add a center two-way left-turn lane, and add a separated/buffered bikeway from Stockton Boulevard to Martin Luther King Jr. Boulevard. This would likely reduce vehicle travel speeds and improve bicyclists comfort, resulting in greater facilitation of bicycle travel.

The timing for these planned improvements on Broadway and Stockton Boulevard is not clearly established by the City of Sacramento. However, the documentation from the *City of Sacramento Bicycle Master Plan* and *Vision Zero Top Five Corridor Study* indicate that the City plans to implement these improvements in the near term, and the SACOG 2020 MTP/SCS identifies the Stockton Boulevard Mobility Project as occurring between 2026 and 2030. Therefore, it is likely that these bikeway improvements would be constructed during the 2020 LRDP Update planning horizon. Initial increases in bicycle travel generated by the 2020 LRDP Update may result in potential

increased automobile and bicycle conflicts before bikeway improvements are constructed on Stockton Boulevard and Broadway. However, existing bikeways, such as the class II bicycle lanes on 2nd Avenue, T Street, 49th Street, and 50th Street and class III bicycle routes on V Street, 48th Street, and 51st Street create an interconnected bicycle network that bicyclists may use as alternate routes to Stockton Boulevard and Broadway prior to these forthcoming bikeway and corridor improvements. Furthermore, these planned improvements to Stockton Boulevard and Broadway would address the potential automobile/bicycle conflicts and complement UC Davis' efforts to increase bicycling as a viable travel option to and from the Sacramento Campus. Therefore, this impact would be **less than significant**.

Pedestrian Travel

Pedestrian activity on the Sacramento Campus is expected to increase alongside employee, student, and healthcare facility growth planned in the 2020 LRDP Update. Moreover, increases in transit and vehicle commute trips would generate additional pedestrian trips between campus destinations and on-campus parking and transit facilities. As new facilities and population are added to the campus under the proposed 2020 LRDP Update, pedestrian facilities would be constructed and enhanced on the campus to ensure safe pedestrian access.

Anticipated increases in pedestrian activity would be concentrated near focal points for campus activity (i.e., main access points to the hospital, outpatient medical facilities, education facilities, research buildings, and Aggie Square), as well as pedestrian walkways between these activity centers. Pedestrian activity would also increase near parking facilities as employees, patients, visitors, and students walk between their vehicles and campus destinations. These pedestrian volume increases are likely to be most pronounced at shift changes and during the morning and evening peak hours near the beginning and end of the typical workday.

The 2020 LRDP Update does not include any changes that would physically disrupt an existing pedestrian facility on or off the campus. To reduce potential conflicts and increase the feeling of safety and comfort for pedestrians and cyclists, major vehicular movement is focused on the outer roads, specifically X Street, 48th and 49th Streets, and 2nd Avenue to Broadway. Other streets on campus, while open to vehicular traffic, will be designed to support a pedestrian and bike network in the campus core. Further, implementation of the 2020 LRDP Update would not interfere with the implementation of planned pedestrian facilities. Therefore, this impact would be **less than significant**.

Transit

Sacramento Campus growth resulting from implementation of the 2020 LRDP Update would increase demand for transit serving the campus. An estimated 300 additional students and employees would utilize transit to commute to and from the UC Davis campus, representing 600 new daily passenger boardings. As a land use plan, the 2020 LRDP Update does not propose new or expanded transit service, thus, new transit passenger demand generated by the 2020 LRDP Update would rely on existing or planned transit serving the campus. Implementation of the 2020 LRDP Update would increase peak hour delay on roadways surrounding the Sacramento Campus, including roadways used by existing fixed-route bus service. These potential increases in overall travel time could adversely affect bus transit operations (i.e., on-time performance). Potential degraded service quality could lead to losses of ridership if commuters decide to utilize other modes of travel (e.g., automobiles). This could result in environmental effects such as increased emissions.

While uncertain, decreased ridership caused by degraded service quality could result from implementation of the 2020 LRDP Update. Unless remedied, degraded transit operations would not meet SacRT performance standards, which would exceed the threshold of significance. Therefore, this impact would be **significant**.

The 2020 LRDP Update includes a new mobility hub at 45th Street to serve as a centralized transit center for the campus. UC Davis anticipates constructing the mobility hub and allowing regional transit providers full access to the mobility hub, which could help with transit network services. For example, the recent partnership including UC Davis, SacRT, and the Yolo County Transportation District on the Causeway Connection bus service between UC Davis campuses utilizes on-campus transit stops. Additional transit services such as these could help regional transit network operations.

Outside the new mobility hub, the 2020 LRDP Update would not interfere with the implementation of planned transit service or facilities identified in the *City of Sacramento General Plan* or the *SacRT Short Range Transit Plan* (Sacramento Regional Transit District 2014). The 2020 LRDP Update would also not interfere with planned regional transit projects identified in the SACOG 2020 MTP/SCS.

The SacRT Service Standards establish vehicle loading standards for SacRT bus and light rail service based on maximum load factors (i.e., the ratio of total passenger capacity to total seats) for each vehicle type. The load factor standard for standard 40-foot fixed-route buses with a seated capacity of 34 passengers is 1.8 (equal to a maximum load of 60 passengers per bus) and the load factor standard for light-rail vehicles is 2.0 (equal to a maximum load of 128 passengers per light rail car, or 512 passengers for a typical four-car light rail train). SacRT considers a route to be overloaded if 25 percent or more of one-way vehicle trips are regularly overloaded. In February 2020, the maximum peak load experienced by Routes 38 and 51 was 18 and 29 passengers, respectively, during a typical weekday⁵ Moreover, in February 2020, the maximum peak load experienced by the Gold Line was 224 passengers during a typical weekday. Zero percent of Route 38, Route 51, and Gold Line trips currently measure above the established load factor during a typical weekday. Thus, the three routes currently meet the established SacRT loading standard.

The SacRT Service Standards also establish productivity standards for each service type, where routes exceeding SacRT's maximum productivity standards are recommended for service increases while corrective action is recommended for routes that fail to meet SacRT's minimum productivity standards. The maximum productivity standard for regular weekday bus service is 40 boardings per revenue hour while the maximum productivity standard for weekday light rail service is a maximum load of 400 passengers. In February 2020, SacRT Routes 38 and 51 generated 12.6 and 25.9 weekday boardings per revenue hour, respectively.⁶ Moreover, in February 2020, the Gold Line experienced a maximum peak load of 224 passengers during a typical weekday. Thus, the three primary SacRT services that serve the project site currently meet the established SacRT productivity standard.

Based on existing ridership and service levels, Routes 38 and 51 could accommodate an additional 1,520 and 1,750 weekday passenger boardings, respectively, before meeting the SacRT productivity standard of 40 boardings per revenue hour. As described previously, the 2020 LRDP Update would

⁵ Based on February 2020 average weekday ridership data provided by SacRT.

⁶ Based on February 2020 average weekday ridership data provided by SacRT.

generate an additional 600 daily passenger boardings from students and employees commuting to and from campus. Therefore, relative to existing SacRT ridership and service levels, transit passenger demand generated by the 2020 LRDP Update alone would not be expected to cause Routes 38 and 51 to exceed the SacRT productivity standard.

SacRT ridership and service levels have experienced substantial changes in recent years. Between 2015 and 2018, combined SacRT bus and light rail ridership decreased by 19 percent⁷, similar to ridership declines experienced by transit operators around the country. In late 2019, SacRT implemented the SacRT Forward plan, a major bus network restructuring aimed at improving service quality and generating ridership. In March 2020, the emergence of the COVID-19 pandemic caused SacRT to substantially reduce service levels and ridership plummeted. As of Summer 2020, service levels have been partially restored to pre-COVID-19 levels while ridership is gradually rebounding. Additionally, emerging disruptive transportation trends (e.g., TNCs, autonomous vehicles, etc.) have not developed to a level of maturity to understand their effects on future transit ridership and service levels. Altogether, these factors introduce uncertainties regarding future SacRT ridership and service levels over the course of the 2020 LRDP Update planning horizon, regardless of the implementation of the 2020 LRDP Update. Therefore, it is not possible to accurately determine the extent to which transit passenger demand generated by the 2020 LRDP Update, together with background SacRT ridership and service levels, would affect SacRT performance with respect to established loading and productivity standards. Thus, it is unknown if the 2020 LRDP Update would cause Route 38, Route 51, the Gold Line, or other potential future SacRT services to fail to meet established loading or productivity standards, or exacerbate performance for routes that already fail to meet these standards, over the course of the 2020 LRDP Update planning horizon.

The SacRT Service Standards establish on-time performance standards as indicators for service reliability. On-time performance for SacRT is measured at time points. A vehicle is considered on-time if it leaves its time point between 0 and 5 minutes late. SacRT's target is for the bus system to be 85 percent on-time or better. SacRT's target is for individual bus routes to be within one standard deviation of 85 percent on-time or better (equal to 76.7 percent or better based on October 2019 data). SacRT's target is for the light rail system to be 97 percent on-time or better. In October 2019, systemwide on-time performance for SacRT bus routes was 73.3 percent, with 3.2 percent early departures and 23.5 percent late departures. SacRT bus routes operating near the Sacramento Campus currently fall below both the systemwide and individual route reliability targets. Route 38 operates at 76.4 percent on-time and Route 51 operates at 73 percent on-time. Additional peak hour vehicle trips and, in turn, vehicle delay generated by the 2020 LRDP Update, could further exacerbate service reliability issues for existing SacRT bus services that operate on roadways surrounding the Sacramento Campus.

An exceedance of established transit service standards would cause transit services to operate below acceptable service level, quality, and/or performance targets, which could be deleterious to the transit passenger experience (i.e., poor reliability, long travel times, crowding on buses, etc.). For passengers who are sensitive to these factors, a degradation of service quality could cause them to

⁷ Based on 2015 and 2018 annual agency profile data for SacRT from the Federal Transit Administration's National Transit Database. Accessed on July 29, 2020 from <https://www.transit.dot.gov/ntd/transit-agency-profiles/sacramento-regional-transit-district>.

2015 Annual Ridership = 25,768,473. 2018 Annual Ridership = 20,890,308.

2015 to 2018 Ridership Decline = $1 - (20,890,308/25,768,473) = -18.9\%$

choose other modes of transportation that generally cause greater adverse effects on the environment (e.g., driving). Passengers choose to use transit due to a variety of factors and personal preferences, including community context (e.g., urban versus suburban), accessibility, convenience, travel time, and costs of modal options. Because transit passenger expectations regarding service quality will vary, the extent to which a degradation of service quality would affect existing and prospective transit ridership, as well as associated adverse environmental effects, is uncertain.

Additional automobile, transit, bicycle, and pedestrian trips to and from the Sacramento Campus resulting from the implementation of the 2020 LRDP Update would be accommodated on existing transportation facilities on and surrounding campus. Additional travel activity could result in the competition for physical space between the modes (e.g., at Stockton Boulevard and Broadway, which currently lack contiguous on-street bicycle facilities), which in turn would increase the potential for collisions, including those involving transit vehicles.

Implementation of Mitigation Measures LRDP-TRA-1a, TRA-1b, and TRA-1c would reduce the significance of this impact. However, the improvements that are necessary to improve transit performance identified in Mitigation Measure LRDP-TRA-1a would require implementation by SacRT and the City of Sacramento. Moreover, the effectiveness of the TDM strategies identified in Mitigation Measure TRA-1c are not known and subsequent vehicle trip reduction effects and, in turn, reductions to delays to transit, cannot be guaranteed. Since UC Davis cannot guarantee that these improvements would be implemented and/or effective, this impact would remain **significant and unavoidable**.

Mitigation Measure LRDP-TRA-1a: Monitor transit service performance and implement strategies to minimize delays to transit service

During the 2020–2021 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline on-time performance metrics for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess on-time performance for routes operating on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus every two years over the 2020 LRDP Update planning horizon. During its standard project review process, UC Davis shall forecast and analyze traffic conditions on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus for individual development projects proposed under the 2020 LRDP Update that are expected to affect operations on these roadways. Relative to baseline levels, if operations on Broadway and Stockton Boulevard are found to cause transit services to fail to meet established standards or to worsen transit performance for services that already fail to meet established standards, or if a project-level analysis indicates the same, UC Davis shall institute TDM strategies to reduce peak hour vehicle trips and, in turn, delays to transit service on Broadway and Stockton Boulevard within the vicinity of the Sacramento Campus.

The implementation of TDM strategies shall offset degradations to transit on-time performance in excess of established on-time performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update.

Implementation of TDM strategies that would reduce delays to transit service on Broadway to Stockton Boulevard include strategies to reduce vehicle travel to and from campus and to

minimize the effect of campus operations on surrounding roadways. Specific potential TDM strategies include, but are not limited to, the following:

- Modify campus-operated shuttles to avoid Broadway and Stockton Boulevard, to the extent practical;
- Promote walking and bicycling for student and employee trips to and from the UC Davis Sacramento Campus;
- Expand public transit service, including additional service connecting campus with student and employee residential areas;
- Implement a fair value commuting program or other pricing of vehicle travel and parking;
- Provide carpool and/or vanpool incentive programs;
- Allow flexible work hours and schedule classes to reduce arrivals/departures during peak hours; and
- Offer remote working options.

The TDM strategies implemented to reduce delays to transit service at these locations will be consistent with existing and planned TDM programs on campus. If these TDM strategies are not sufficient to reduce delays to transit service per the criteria described above, additional TDM measures or adjustments to the measures above shall be implemented, as needed to reduce peak hour intersection delay consistent with the criteria described above.

Mitigation Measure LRDP-TRA-1b: Monitor transit service performance and implement transit service and/or facility improvements

During the 2020–2021 academic year, UC Davis shall coordinate with SacRT and other relevant transit operators to establish baseline transit performance (i.e., loading, productivity, and on-time performance) and safety metrics for routes operating within the vicinity of the Sacramento Campus consistent with established standards and methods. This process should consider the effects of the current COVID-19 pandemic on transit performance. UC Davis shall additionally coordinate with SacRT and other relevant transit operators to assess transit performance and safety for routes operating within the vicinity of the Sacramento Campus every two years over the 2020 LRDP Update planning horizon.

Relative to baseline levels, if the performance of routes operating within the vicinity of the Sacramento Campus is found to fail to meet established standards or if performance worsens for services that already fail to meet established standards, SacRT and other relevant transportation agencies shall implement transit service and/or facility improvements. The implementation of transit service and/or facility improvements shall offset degradations to transit performance in excess of established performance standards (per the most up-to-date SacRT Service Standards) that are attributable to the implementation of the 2020 LRDP Update.

Currently, SacRT and other relevant transit operators regularly monitor transit service performance and adjust service levels, as feasible, according to established service standards. SacRT and other relevant transit operators would continue to implement this monitoring and service change process over the duration of the 2020 LRDP Update implementation. Moreover, UC Davis would continue to adjust campus-operated shuttle routes and schedules as warranted by passenger demand and other operating considerations. Additionally, nearby roadway owners

such as the City of Sacramento and Caltrans operate and maintain their facilities consistent with their policies and standards related to multi-modal transportation operations. As requested, UC Davis shall meet with SacRT, the City of Sacramento, Caltrans, and/or other transportation agencies to coordinate the implementation of transit service and/or facility improvements.

Potential transit improvements include modifying existing transit routes or adding new routes to serve areas of the Sacramento Campus underserved by transit, adding service capacity (through increased headways and/or larger vehicles) to prevent chronic overcrowding, constructing transit priority treatments to improve service reliability (i.e., transit only lanes on Broadway and Stockton Boulevard, transit signal priority at traffic signals, etc.), improving terminal facilities to accommodate additional passengers and transit vehicles, and improving coordination between transit providers. Improvements should be selected based on existing performance data and targeted to address those areas not meeting established service standards (e.g., investing in transit priority treatments if on-time performance is the issue, or adding service capacity if vehicle loading is the issue).

Transit facility and roadway improvements shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento, and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities (e.g., additional bus service that exceeds available bus stop or transit terminal capacity) or otherwise adversely affect transit operations.

Mitigation Measure LRDP-TRA-1c: Monitor transit-related collisions and implement countermeasures to minimize potential conflicts with transit service and facilities

During the 2020–2021 academic year and every 2 years thereafter, UC Davis shall record on-campus collisions involving a transit vehicle and establish a transit vehicle collision rate. The rate should be sensitive to transit provider, location context, and facility type (e.g., intersection versus segment). UC Davis shall determine the on-campus transit vehicle collision rate as part of a biennial mitigation monitoring program. In instances where the rate increases from the prior observation period, UC Davis shall develop and implement countermeasures that address collision hot-spots and common primary collision factors. UC Davis shall also identify and develop countermeasures for locations where the change in the mix of travel patterns and behavior is determined to be incompatible with the facility as designed. Potential countermeasures include physically separating modes in shared operating environments, particularly high- versus low-speed travel modes, and increased education and enforcement.

Transit facility and roadway improvements that intend to minimize conflicts between transit vehicles and other travel modes shall be designed and constructed in accordance with industry best practices and applicable UC Davis, City of Sacramento (for facilities within the City of Sacramento), and State of California standards. Improvements shall be implemented or constructed in a manner that would not physically disrupt existing transit service or facilities or otherwise adversely affect transit operations.

Impact LRDP-TRA-2: Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)

Implementation of the 2020 LRDP Update would result in additional vehicle travel generated by the Sacramento Campus. However, the Sacramento Campus is a low VMT-generating area of the Sacramento region with access to mass transit and multiple travel options. The 2020 LRDP Update would further add to the campus' existing mix of medical, education, and employment uses, as well as increase complementary land uses, which would increase internal trip capture and reduce VMT generation. This impact would be **less than significant**.

The Sacramento Campus is just southeast of the central city grid of Sacramento, which is the most densely and diversely developed area in the region. This location is considered a low-VMT area of the Sacramento region as demonstrated in all the mapping analyses conducted by SACOG for the 2020 MTP/SCS. The 2020 MTP/SCS acknowledges that "location within the region is very likely the most important variable in determining how much time people spend in their vehicles. Communities within existing urban areas, and with a mix and density of uses, tend to produce less VMT per resident than places that are farther away and spread out." Furthermore, the Sacramento Campus has access to multiple travel mode options, including the Gold Line light rail service which has two stations less than 0.5 mile north of the campus.

The Sacramento Campus consists of a mix of medical, education, and employment uses with some complementary supporting uses, such as utility plants, facilities buildings, and lodging options for visitors and family members of patients. Implementation of the 2020 LRDP Update would provide a similar mix of medical, education, and employment uses on the campus, as well as provide additional complementary uses, including high-density residential and a small amount of commercial retail and restaurant uses (see Table 3.15-5).

The Technical Advisory identifies recommended thresholds for three project types: office, residential, and retail. The Technical Advisory further recommends that each component of a mixed-use project be evaluated independently and apply the significance threshold for each project type. Since the medical, education, and employment uses are most similar to office uses in that they are places of employment, this analysis relies on the recommendations for office projects for the medical, education, and employment uses collectively as planned in the 2020 LRDP Update.

Proximity to Major Transit Stop

Per CEQA Guidelines section 15064.3, subdivision (b)(1), "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." As shown in Figure 3.15-7, the northern half of the Sacramento Campus generally north of X Street is within 0.5 mile of a major transit stop (i.e., a SacRT Gold Line light rail transit station). Individual projects contemplated in the 2020 LRDP Update that are located within 0.5 mile of a Gold Line light rail station would potentially qualify for this presumption. However, other projects beyond this 0.5 mile distance from the Gold Line light rail stations would likely not qualify. Most of the southern half of the Sacramento Campus generally south of 2nd Avenue is more than 0.5 mile from a major transit stop. While some individual projects contemplated in the 2020 LRDP Update may qualify for this presumption of a less-than-significant impact based on their proximity to the Gold Line light rail stations, not all development on the campus would qualify.

Employment Uses—Medical, Education, and Office

As shown in Figure 3.15-4, the Sacramento Campus is in an area that currently generates work VMT per employee that is 19 percent below the regional average. The Technical Advisory suggests office projects exceeding a level of 15 percent below existing regional work VMT per employee may indicate a significant impact. Since the Sacramento Campus is in an area that generates work VMT per employee below this 15 percent threshold, it is considered a low-VMT area.

The 2020 LRDP Update introduces additional complementary land uses to the campus, specifically residential units that could be marketed to students and campus employees and limited commercial retail and restaurant space to serve the campus population, in addition to increasing the medical, education, and employment uses on the campus. This increase in land use diversity would increase internal trip capture and reduce VMT per employee compared to the existing campus. While the 2020 LRDP Update introduces new complementary land uses, the overall mix of the uses and character of the campus will be similar in features (i.e., density, mix of uses, and transit accessibility) to the existing campus and surrounding area.

Per the Technical Advisory, office projects “that locate in areas with low VMT and incorporate similar features (i.e., density, mix of uses, transit accessibility) will tend to exhibit similarly low VMT.” The Technical Advisory further states that “because new development in such locations would likely result in a similar level of VMT, such maps can be used to screen out residential and office projects from needing to prepare a detailed VMT analysis.”

Based on this guidance from the Technical Advisory, the employment uses planned in the 2020 LRDP Update are expected to have a less-than-significant VMT impact since the project is in a low-VMT area.

Residential Uses

As shown in Figure 3.15-5, the Sacramento Campus is in an area that currently generates household VMT per capita that is 37 percent below the regional average and 21 percent below the City average. The Technical Advisory suggests residential projects exceeding a level of 15 percent below existing region or city VMT per capita may indicate a significant impact. Since the Sacramento Campus is in an area that generates total household VMT per capita below this 15 percent threshold, it is considered a low-VMT area.

As noted in the employment uses discussion, the 2020 LRDP Update introduces residential units that would add diversity and balance to the land use mix of the Sacramento Campus, increasing the internal trip capture and reducing VMT per capita compared to existing uses. While the 2020 LRDP Update introduces residential uses to the campus, the overall mix of the uses and character of the campus will be similar in features (i.e., density, mix of uses, transit accessibility) to the existing campus and surrounding area.

Per the Technical Advisory, residential projects “that locate in areas with low VMT and incorporate similar features (i.e., density, mix of uses, transit accessibility) will tend to exhibit similarly low VMT.” The Technical Advisory further states that “because new development in such locations would likely result in a similar level of VMT, such maps can be used to screen out residential and office projects from needing to prepare a detailed VMT analysis.”

Based on this guidance from the Technical Advisory, the residential uses planned in the 2020 LRDP Update are expected to have a less-than-significant VMT impact because the project is in a low-VMT area.

Commercial Retail Uses

The 2020 LRDP Update plans for 20,000 gsf of commercial retail and 20,000 gsf of restaurant space out of the more than 7,000,000 gsf of development at full implementation of the plan. It is anticipated that this limited amount of commercial retail and restaurant space will in large part serve the Sacramento Campus population and the immediate surrounding neighborhoods. Therefore, it is reasonable to conclude that the commercial retail and restaurant components of the 2020 LRDP Update would primarily be local-serving in nature. Per the Technical Advisory, this local-serving commercial retail and restaurant space planned in the 2020 LRDP Update would have a less-than-significant VMT impact.

Additional VMT Considerations

Emerging Trends and SACSIM Model Limitations

This analysis concludes that the 2020 LRDP Update would have a less-than-significant impact on VMT based on the recommended screening analysis methodology presented in the Technical Advisory. This includes reliance on VMT screening maps prepared by SACOG based on data from the SACSIM travel forecasting model. While the SACSIM model represents state of the practice or advance practice, travel behavior and the transportation systems are changing quickly in response to emerging trends, new technologies, and different preferences, as noted in the Environmental Setting section on page 3.15-17. These changes combined with the current effects of the COVID-19 pandemic increase uncertainty about how VMT generation rates may fluctuate by the time implementation of the 2020 LRDP Update occurs.

The trajectory of deployment, market acceptance, and government regulation of these new travel options and technologies is difficult to predict and these elements directly influence the inputs and algorithms for the SACSIM model. As such, SACSIM as a travel forecasting model has limitations in its ability to capture the full range of potential travel effects from emerging travel options and technologies.

The SACSIM model does include some scenario testing capabilities that can begin to test different hypotheses of these impacts, but until more research is done about the likely behavioral responses to new modes and technologies is completed, travel models cannot fully capture these changes in a reliable way. Initial testing of AV effects using SACSIM, such as lowering costs to use vehicles and making them more convenient by eliminating parking at trip ends does generate increases in overall vehicle travel and reductions in transit ridership, with all else being equal. The information suggests the model is sensitive to how cost and convenience influence travel behavior but within the limits of the observed data used to develop the model.

2018 Progress Report

As noted in the Regulatory Setting section, CARB is tasked with preparing a report every 4 years analyzing the progress made under SB 375 pursuant to SB 150. While MPOs have consistently produced SCSs that contain forecasts demonstrating compliance with SB 375 GHG reduction targets, observed data related to VMT and GHG mobile emission trends tell a different story. CARB's 2018

Progress Report California's Sustainable Communities and Climate Protection Act (2018 Progress Report) (California Air Resources Board 2018) shows VMT per capita and GHG per capita rates increased from 2012 to 2018. According to the report, "California – at the state, regional, and local levels – has not yet gone far enough in making the systemic and structural changes to how we build and invest in communities that are needed to meet state climate goals." Local agencies have not changed land use patterns or housing amounts consistent with SCS expectations. Further, improved economic activity (prior to the COVID-19 pandemic), new vehicle travel options (i.e., Uber and Lyft), internet shopping, higher visitation, and low fuel prices contributed to increased vehicle travel that was not fully accounted for in SCS forecasts.

VMT Effects of COVID-19 Pandemic

The COVID-19 pandemic decreased VMT as a result of government orders that curtailed mobility and suppressed economic activity. While this sudden decline in VMT is expected to be temporary, it is uncertain what long-term effects the COVID-19 pandemic will have on travel behavior. By necessity, large portions of the public adapted to a notable increase in teleworking, distance learning, telemedicine, internet shopping, and home delivery. The current physical distancing recommendations have also reduced demand for mass transit and shared mobility options. The combination of these effects could result in increased or decreased VMT per capita levels in the future, depending on how temporary or permanent these behavioral changes become.

Since the VMT effects of emerging trends and the COVID-19 pandemic are uncertain, and because the COVID-19 pandemic has disrupted the VMT trends documented in the 2018 Progress Report, any definitive conclusions for how these other VMT considerations will affect project VMT-generation is speculative.

Conclusion

The 2020 LRDP Update proposes development that is similar to existing characteristics of the study area (i.e., density, mix of uses, and transit accessibility). The 2020 LRDP Update also proposes an increase in complementary land uses that would increase land use diversity, increase internal trip capture, and reduce VMT per capita. Per the Technical Advisory, projects "that locate in areas with low VMT and incorporate similar features (i.e., density, mix of uses, transit accessibility) will tend to exhibit similarly low VMT." Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact LRDP-TRA-3: Result in changes to the transportation system that would create hazardous features or incompatible traffic uses

The 2020 LRDP Update does not propose any new roadways or transportation facilities that would be inconsistent with applicable design standards. This impact would be **less than significant**.

The 2020 LRDP Update would result in increased travel activity, including bicycle, pedestrian, transit, and vehicle trips, as discussed in Impacts LRDP-TRA-1, and LRDP-TRA-2. These trips would be served by existing and planned facilities that are constructed to applicable design standards to serve these travel modes. To reduce potential conflicts and increase the feeling of safety and comfort for pedestrians and cyclists, major vehicular movement is focused on the outer roads, specifically X

Street, 48th and 49th Streets, and 2nd Avenue to Broadway. Other streets on campus, while open to vehicular traffic, will be designed to support a pedestrian and bike network in the campus core.

Consequently, the 2020 LRDP Update would not result in a change to the volume, mix, or speed of traffic that is not compatible with the design of existing roadways and transportation facilities. Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact LRDP-TRA-4: Result in inadequate emergency access

The Sacramento Campus roadway and transportation network is designed to maintain high levels of accessibility and includes multiple emergency vehicle access facilities that can be used when necessary. This ensures emergency response vehicles have the necessary access when responding to an emergency. This impact would be **less than significant**.

The proposed roadway and transportation network under the 2020 LRDP Update would be designed to maintain high levels of accessibility and personal mobility. The campus generally has a grid network of streets to provide redundant connectivity. Many buildings have adjacent parking areas that could be used by emergency responders. For buildings with primary access points on a dedicated pedestrian facility rather than a vehicular roadway or parking area, pedestrian promenades are wide enough to accommodate emergency vehicles and have removable bollards at roadway junctures should emergency access be necessary.

Access to the campus is designed to minimize neighborhood intrusion but ensure that emergency vehicles are able to serve the campus and adjoining areas without any reduction in access. The campus has multiple access points to the west (to Stockton Boulevard) and south (to Broadway) to allow emergency vehicles to use the most convenient and direct routes. Access to the campus from the north (i.e., from V Street and the Elmhurst neighborhood) is limited to one location at 49th Street. Primary emergency vehicle access to the Elmhurst neighborhood to the north will continue to be available via V Street and 49th Street. However, should emergency access via 45th and 48th Streets also be required, these streets remain accessible to emergency vehicles but closed to general traffic through the use of removable bollards. Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact LRDP-TRA-5: Result in construction activity that could cause temporary impacts to transportation and traffic

Implementation of the 2020 LRDP Update would involve construction activities that could cause temporary impacts to transportation facilities. However, mitigation measure LRDP-TRA-5 would reduce this impact. Therefore, this impact would be **less than significant with mitigation**.

Implementation of the 2020 LRDP Update would involve construction activities that could cause temporary impacts to transportation facilities, including temporary roadway, bikeway, and sidewalk

closures, degrading roadway pavement conditions, temporary degradation in traffic operations, temporary relocation or displacement of transit or shuttle stops, closure of parking lots resulting in displaced parking, and increasing potential for conflicts between construction vehicles and bicyclists and pedestrians. Therefore, this impact would be significant.

Implementation of the 2020 LRDP Update would consist of construction activities related to multiple individual buildings and projects that could span a couple of decades. During LRDP implementation, there may be periods of active construction and periods of limited or no construction, depending on the unique characteristics and individual timelines for a specific project.

Construction trips would include construction employee trips to and from construction sites as well as delivery trucks for materials and equipment. In addition to construction activity at project sites, construction activity may require the use of adjacent transportation facilities (i.e., sidewalks, bikeways, roadways) and/or parking areas for staging of equipment or material. Construction activity could also temporarily alter access to campus destinations, resulting in the need for temporary detours for bicyclists, pedestrians, buses, shuttles, and/or vehicles.

Implementation of Mitigation Measure LRDP-TRA-5 would reduce this impact and ensure that construction activity would not significantly impact transportation and traffic. Therefore, this impact would be **less than significant with mitigation**.

Mitigation Measure LRDP-TRA-5: Prior to the issuance of any grading or building permits, a Construction Traffic Management Plan (TMP) will be prepared to the satisfaction of UC Davis Health and the City of Sacramento Department of Public Works for City-owned roadways

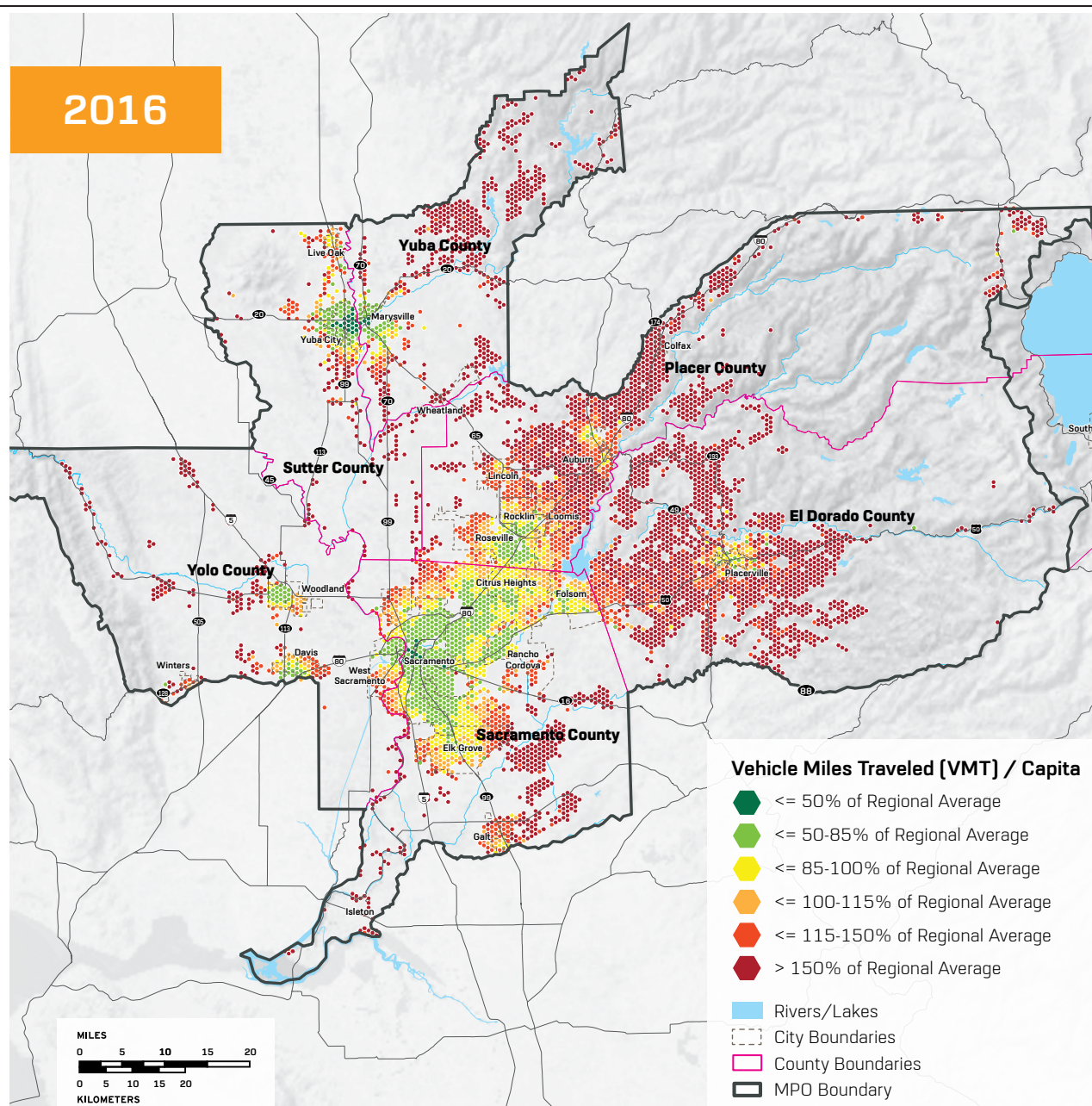
The Construction TMP will include items such as the following.

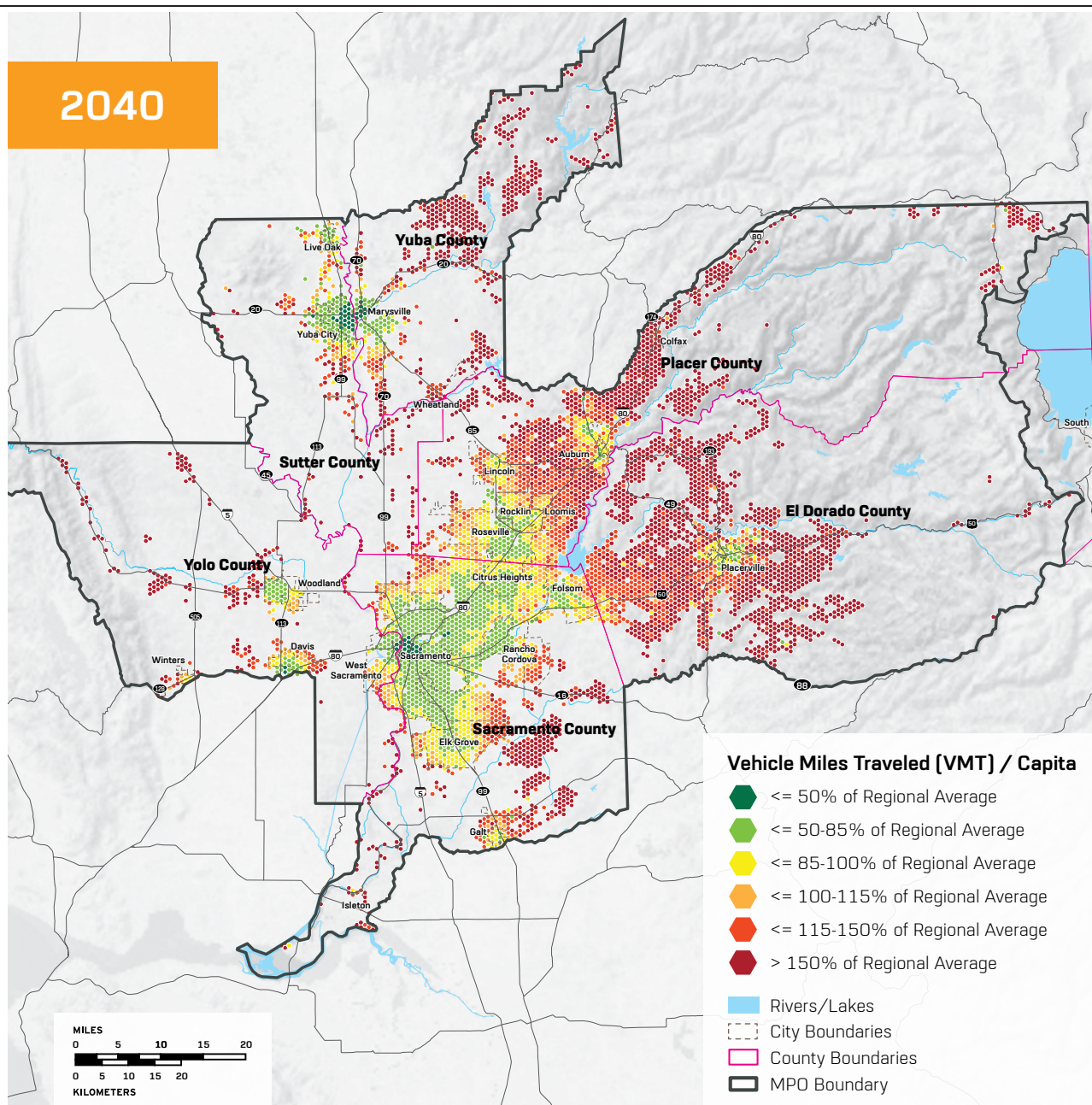
- Preserving emergency vehicle access routes to existing buildings on the Sacramento Campus
- Providing truck circulation routes/patterns that minimizes effects on existing vehicle traffic during peak travel periods and maintains safe bicycle circulation
- Monitoring for roadbed damage and timing for completing repairs
- Preserving safe and convenient passage for bicyclists and pedestrians through/around construction areas
- Creating methods for partial (i.e., single lane)/complete street closures (e.g., timing, signage, location and duration restrictions), if necessary
- Identifying detour routes for roadways subject to partial/complete street closures
- Identifying temporary UC Davis shuttle stops and detoured shuttle routes if existing stops or routes are affected
- Identifying temporary SacRT bus stops and detoured bus routes, if existing stops or routes are affected
- Developing criteria for use of flaggers and other traffic controls
- Providing a point of contact for nearby residents, Sacramento Campus staff, students, and visitors, and other stakeholders to contact to obtain construction information and have questions answered

The Construction TMP will be developed so that the following performance standards are achieved throughout project construction.

- Maintain emergency vehicle access to all buildings on the Sacramento Campus at all times.
- Maintain identified emergency vehicle routes to UC Davis Health medical facilities at all times. Notify appropriate contacts for UC Davis Health and/or emergency responders at least 24 hours prior to any construction-related partial/complete closures that may affect emergency vehicle routes, and provide clear identification of detours when necessary.
- Minimize construction traffic during morning and evening peak periods when street traffic on local and campus streets are highest
- Close (i.e., partially or fully) any construction-related public roadways only during off-peak periods and provide appropriate construction signage, including detour routing
- Limit detour routing to campus roadways or City collector and arterial roadways, such as Stockton Boulevard and Broadway, to the extent feasible. Include measures to minimize traffic increases on local residential roadways; this may include signage and law enforcement presence during partial/complete closures to discourage through-traffic use of local residential roadways
- Clear roadways, sidewalks, crosswalks, and bicycle facilities of debris (e.g., rocks) that could otherwise impede travel and impact public safety, and maintain them in this condition

UC Davis will also consider any concurrent construction activity and other active Construction TMPs when reviewing new Construction TMPs for specific LRDP implementation projects. This review will address the effects of simultaneous construction activity.

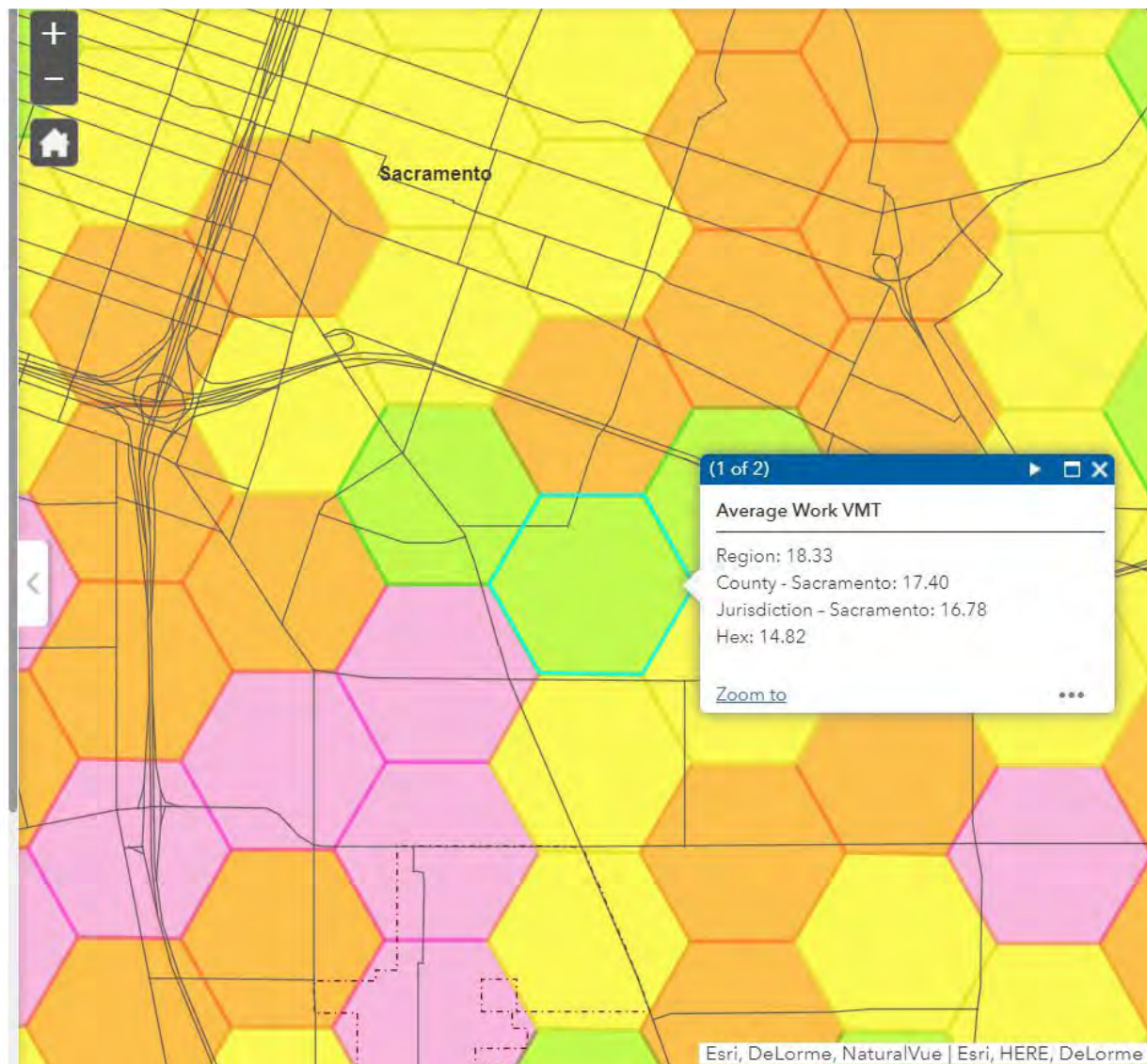
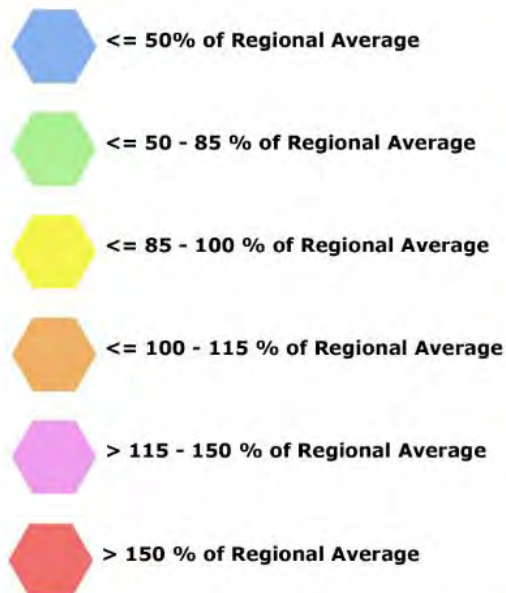






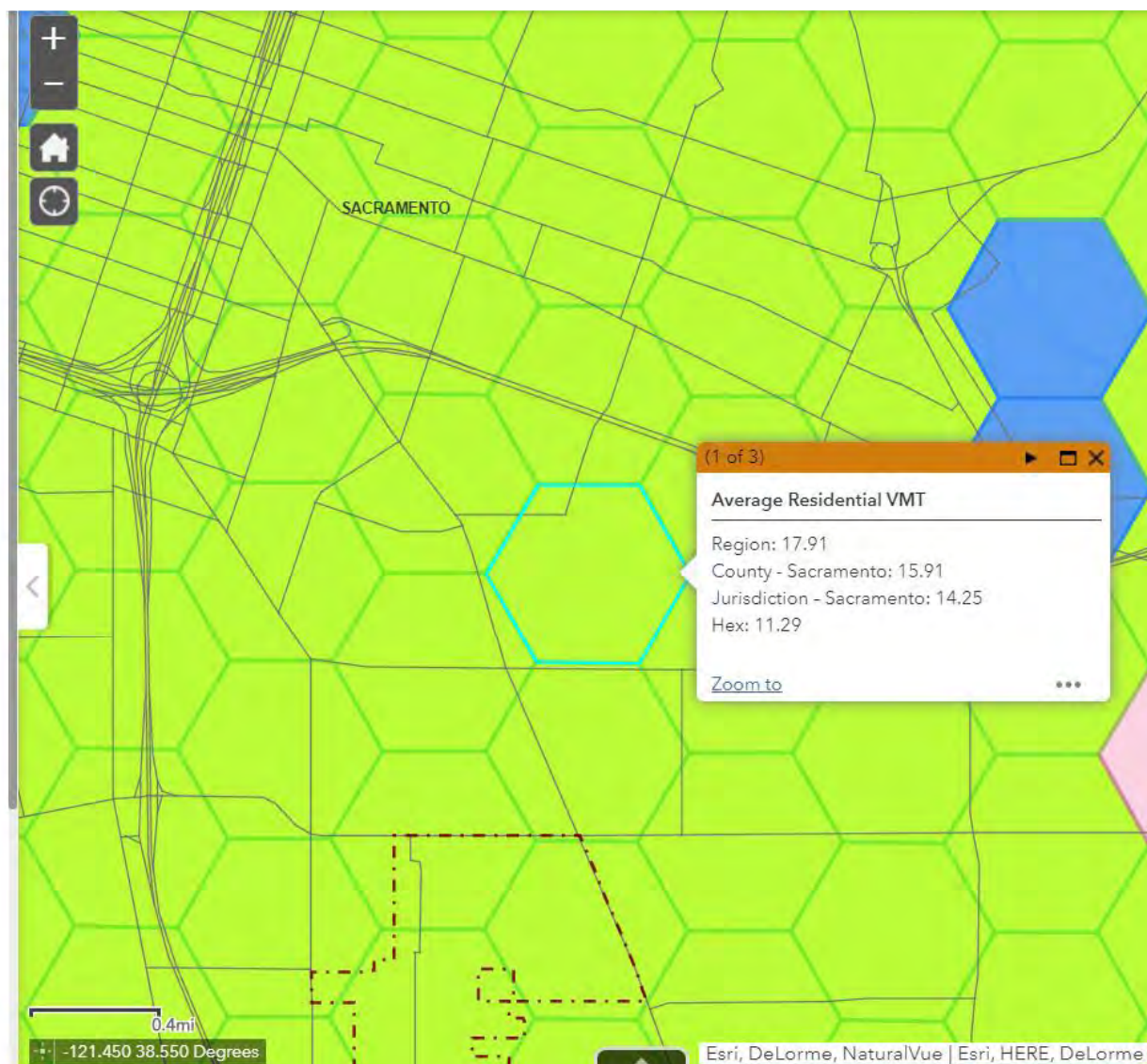
For OFFICE project, the threshold is defined as Workplace-based VMT per job achieving 15% of reduction comparing to regional (or any appropriate sub-area) average.

Average workplace VMT per job at a Hex is computed by summing VMTs from all work-based tours (trips 1,2 and 5 in the diagram) and sub-tours (trips 4 and 5 in the diagram) at workplace in the Hex and divided by the jobs in the Hex available for residents inside SACOG region.



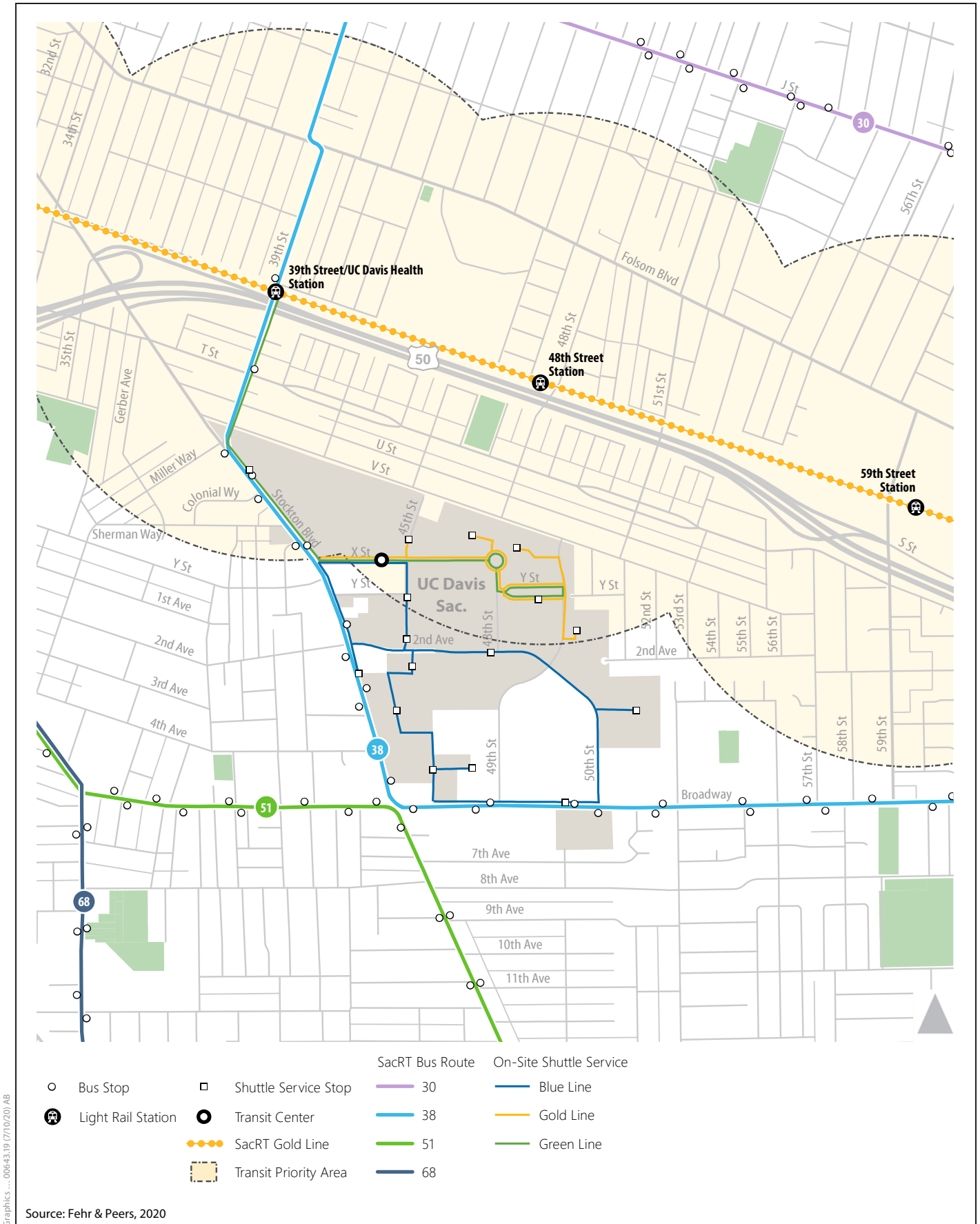
Source: SACOG, 2020

For RESIDENTIAL projects, threshold is defined as total household VMT per capita achieving 15% of reduction comparing to regional (or any appropriate sub-area) average. The map uses HEX geography. Household VMT per capita per HEX is calculated by tallying all household VMTs generated by the residents living at the HEX and divided by the total population in the HEX.



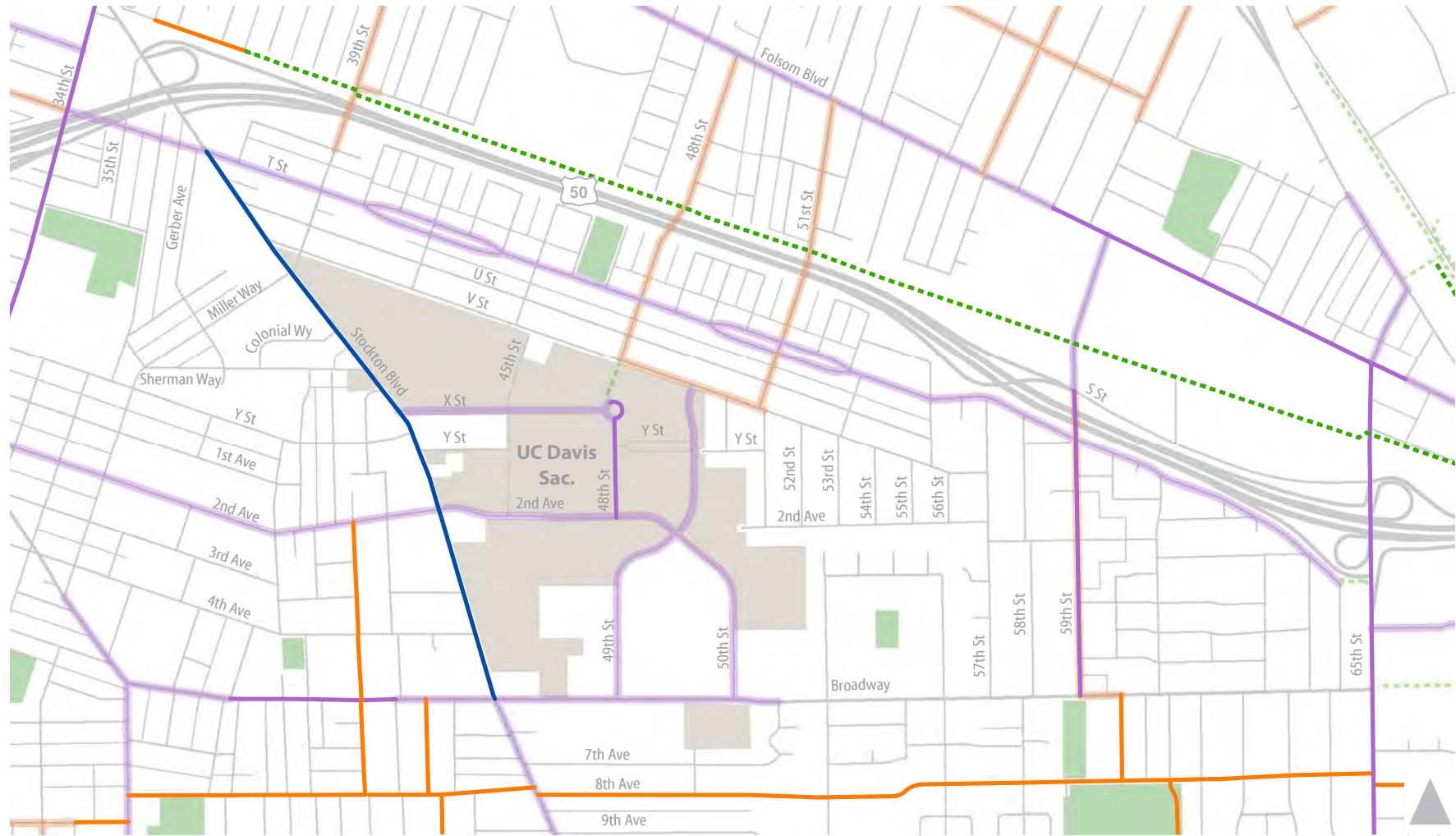
Source: SACOG, 2020





UC DAVIS

Figure 3.15-7
Existing Transit Facilities and Transit Priority Areas (TPA)



- | | | |
|-----------------------------|----------------------------|----------------------------|
| Existing Bicycle Facilities | Planned Bicycle Facilities | UC Davis Sacramento Campus |
| Class I Bike Path | Class I Bike Path | Parks |
| Class II Bike Lane | Class II Bike Lane | |
| Class III Bike Route | Class III Bike Route | |
| | Class IV Separated Bikeway | |

Source: Fehr & Peers, 2020

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Figure 3.15-8
Existing and Planned Bicycle Facilities

3.16 Utilities and Service Systems

This section describes the regulatory and environmental setting for utilities and service systems in the plan area, analyzes effects on utilities and service systems including water, wastewater, solid waste, telecommunications, and energy supply utilities that would result from implementation of the 2020 LRDP Update, and provides mitigation measures to reduce the effects of any significant impacts, if applicable.

In response to the Notice of Preparation for this Supplemental EIR, commenters expressed the following concerns related to utilities and service systems.

- The need for impact evaluations related to utility lines, utility easements, and electrical load needs.
- Sacramento Municipal Utility District (SMUD) provided a list of existing and estimated proposed electrical facilities.

3.16.1 Existing Conditions

Regulatory Setting

This section summarizes key University of California, federal, state, and regional and local regulations, laws, and policies relevant to utilities and service systems in the plan area.

University of California

As noted in Section 3.0.2, *University of California Autonomy*, the University, as a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes. However, UC Davis may consider, for coordination purposes, 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.

UC Sustainable Practices Policy

The University of California adopted the *University of California Policy on Sustainable Practices* (UC Sustainable Practices Policy) in 2006. It covers nine areas of operational sustainability: green building design, clean energy, climate protection, sustainable transportation, sustainable procurement, sustainable building operations, recycling and waste management, sustainable food services, and sustainable water systems. The UC Sustainable Practices Policy is frequently updated. The most recent changes were formally issued in July 2019. The policy changes include extensive revisions to the goals and practices of the Zero Waste section (University of California 2019).

The Zero Waste section sets forth the following goals and practices:

- The University prioritizes waste reduction in the following order: reduce, reuse, and then recycle and compost.
- The University supports the integration of waste, climate and other sustainability goals, including the reduction of embodied carbon in the supply chain through the promotion of a

circular economy and the management of organic waste to promote atmospheric carbon reduction. In support of this goal, waste reporting will include tracking estimated scope 3 greenhouse gas emissions.

- The University will reduce per capita total municipal solid waste generation at all locations other than medical centers as follows:
 - reduce waste generation per capita to FY2015/16 levels by 2020,
 - reduce waste generation by 25 percent per capita from FY2015/16 levels by 2025, and
 - reduce waste generation by 50 percent per capita from FY2015/16 levels by 2030.
- The University will achieve zero waste by 2020 at all locations other than medical centers. Minimum compliance for zero waste is 90 percent diversion of municipal solid waste from landfills.
- By 2020, the University will prohibit the sale, procurement or distribution of Expanded Polystyrene (EPS) other than that utilized for laboratory supply or medical packaging and products. The University seeks to reduce, reuse and find alternatives for packaging foam used for laboratory and medical packaging products.
- No EPS shall be used in foodservice facilities for takeaway containers.

The Sustainable Water Systems section calls for the following goals and practices:

- Reduce growth-adjusted potable water consumption 20 percent by 2020 and 36 percent by 2025, when compared to a three-year average baseline of FY 2005-05, FY 2006-07, and FY 2007-08.
- Develop and maintain a water Action Plan that identifies long-term strategies for achieving sustainable water systems, including quantification of turf areas.
- Identify existing single-pass cooling systems and constant-flow lab equipment and develop a place for replacement and avoid once-through or single-pass cooling systems for soft-plumbed systems. (University of California 2019)

UC Davis Drought Response Action Plan

Potable water conservation and efficiency are necessary to meet the policy targets for water use reduction. The 2014 UC Davis Drought Response Action Plan (Kirk and Phillips 2014) outlines 49 measures across multiple campus sectors: Operations; Dining Services; Landscape Management; Research Water Use; Communication, Behavior Education, and Outreach; Utilities Infrastructure; and New Construction and Renovation.

Key conservation actions that can substantially reduce water use include:

- Use of reclaimed water in some of the cooling towers.
- Operational changes to cooling tower cycling.
- Retrofit on research fisheries' well to recycle water use, and pump less water.
- Replacement of some older water fixtures.
- Significantly reduced irrigation.
- Retrofit of some landscaped areas.
- Implementation of behavior education and leak and water waste reporting programs.

The campus has met both the 2020 and the 2025 water conservation targets established in the UC Sustainable Practices Policy through implementing these actions.

Federal

Clean Water Act

The Clean Water Act (CWA) employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The U.S. Environmental Protection Agency (EPA) established primary drinking water standards in Section 304 of the CWA. States are required to ensure that the public's potable water meets these standards.

Section 402 of the CWA creates the National Pollutant Discharge Elimination System (NPDES) regulatory program. Point sources must obtain a discharge permit from the proper authority (usually a state, sometimes EPA, a tribe, or a territory). NPDES permits cover various industrial and municipal discharges, including discharges from storm sewer systems in larger cities, stormwater associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than 1 acre, and mining operations. All so-called "indirect" discharges are not required to obtain NPDES permits. "Indirect" dischargers send their wastewater into a public sewer system, which carries it to the municipal sewage treatment plant, through which it passes before entering a surface water.

State

Assembly Bill 939

In 1989, Assembly Bill (AB) 939 established the current organization, structure, and mission of the California Integrated Waste Management Board. The purpose was to direct attention to the increasing waste stream and decreasing landfill capacity, and to mandate a reduction of waste being disposed. Jurisdictions were required by AB 939 to meet diversion goals of 25 percent by 1995 and 50 percent by the year 2000. Each city and county was required to submit a plan (i.e., Source Reduction and Recycling Element) that describes how they would meet the waste reduction mandates. The University of California is not subject to this act. However, sustainability is a central element of the 2020 LRDP Update and the UC Sustainable Practices Policy sets waste diversion goals of 75 percent by June 2012 and zero waste by 2020 (University of California 2019).

California Universal Waste Law

The California Universal Waste Law went into effect February 2006 (Cal. Code Regs, Title 22, Division 4.5, Chapter 23). Universal wastes are a wide variety of hazardous wastes such as batteries, fluorescent tubes, and some electronic devices, that contain mercury, lead, cadmium, copper, or other substances hazardous to human and environmental health. Universal waste may not be discarded in solid waste landfills, but instead is recyclable and (to encourage recycling and recovery of valuable metals) can be managed under less stringent requirements than those that apply to other hazardous wastes.

Government Code 54999

Government Code Section 54999 provides for the payment of fees in certain specific enumerated situations for capital improvements to utilities serving the University. A capital facilities fee that is imposed must be nondiscriminatory and the amount must not exceed the prorated amount necessary to provide capital facilities to the University.

California Green Building Standards Code

The State of California historically establishes progressive standards that serve as models for other states and even the federal government. With the adoption of the 2010 California Green Building Standards Code (CALGreen), California became the first state to incorporate green building strategies into its building code. This section comprises Part 11 of the California Buildings Standards Code in Title 24 of the California Code of Regulations. CALGreen outlines mandatory and voluntary requirements for new residential and nonresidential buildings (e.g., retail, offices, public schools, hospitals) throughout the state beginning on January 1, 2011.

The CALGreen Code aims to: (1) reduce greenhouse gas (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 directives by the Governor. Pursuant to the California Global Warming Solutions Act of 2000 (AB 32), CALGreen provides strategies to reduce building-related sources of GHG to attain California's 2020, 2030, and 2050 goals.

The provisions of CALGreen include both voluntary and mandatory measures for green building. Buildings and communities that have obtained the CALGreen title have met the minimum requirements of the code; these include: (1) reduction in water consumption, (2) diversion of construction waste from landfills, (3) installation of low-emitting materials, and (4) commission of new buildings over 10,000 square feet (sf).

CALGreen also includes appendices that consist of voluntary measures designed to be adopted by local governments. This gives local jurisdictions the power to decide which measures they wish to pursue. Tier 1 communities must comply with the provisions of section A4.601.4.2 of CALGreen. This includes compliance with all mandatory measures, improvements in efficiency and reduction of waste, as well as the adoption of at least eight additional measures from five categories: planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. Tier 2 rated communities must exceed the Tier 1 standard by adoption of at least 12 voluntary measures and establish even more stringent efficiency policies.

The measures apply to residential and nonresidential projects that include new construction, demolition, and/or additions and alterations. Upon submission of an application, projects must provide plans to comply with the Tier 1 standards set forth by CALGreen.

In implementing a statewide baseline for green building strategies, California recognized the adverse effects of anthropogenic climate change. CALGreen serves as a tool for California to reduce GHG emissions and physical waste, increase energy efficiency, and achieve water conservation and water efficiency.

The standards included in the 2019 (CALGreen) Code became effective on January 1, 2017. The CALGreen Code was developed to enhance the design and construction of buildings, and the use of sustainable construction practices.

California Water Code, Water Supply Wells, and Groundwater Management

The California Water Code is enforced by California Department of Water Resources (DWR). DWR's mission is "to manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments." DWR is responsible for promoting California's general welfare by ensuring beneficial water use and development statewide. The laws regarding groundwater wells are described in California Water Code Division 1, Article 2 and Articles 4.300 through 4.311; and Division 7, Articles 1 through 4. Further guidance is provided by bulletins published by DWR, such as bulletins 74-81 and 74-90 related to groundwater well construction and abandonment standards.

Groundwater Management is outlined in the California Water Code, Division 6, Part 2.75, Chapters 1 through 5, Sections 10750 through 10755.4. The Groundwater Management Act was first introduced in 1992 as AB 3030, and has since been modified by Senate Bill (SB) 1938 in 2002, AB 359 in 2011, and AB 1739 in 2014. The intent of the Groundwater Management Act is to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions and to provide a methodology for developing a Groundwater Management Plan.

Water Supply Assessment

The State of California adopted SB 610 effective January 1, 2002. SB 610 requires cities and counties, when evaluating large development and redevelopment projects, to request an assessment of the availability of water supplies from the water supply entity that will provide water to a project. The Water Supply Assessment is performed in conjunction with the land use approval process associated with a project and to assess long-term reliability of water supplies. These requirements do not apply to UC Davis, as the University is a Constitutionally created State entity. The City of Sacramento provides water to the UC Davis Sacramento Campus and is subject to completing the Water Supply Assessments; UC Davis will continue to provide expected use data to assist the City in preparing any required Water Supply Assessments.

Sustainable Groundwater Management Act of 2014

The Sustainable Groundwater Management Act of 2014 (SGMA) became law on January 1, 2015, and applies to all groundwater basins in the state (Water Code Section 10720.3). By enacting the SGMA, the legislature intended to provide local agencies with the authority and the technical and financial assistance necessary to cooperatively manage groundwater within their region in a sustainable manner (Water Code Section 10720.1). The SGMA is a follow up to SB X7-6, adopted in November 2009, which mandated a statewide groundwater elevation monitoring program to track seasonal and long-term trends in groundwater elevations in California's groundwater basins. In accordance with this amendment to the Water Code, DWR developed the California Statewide Groundwater Elevation Monitoring (CASGEM) program.

Pursuant to the SGMA, any local agency that has water supply, water management or land use responsibilities within a groundwater basin may elect to be a "groundwater sustainability agency" for that basin (Water Code Section 10723). Cities, counties, and water agencies within that basin had until January 1, 2017, to elect to become or form a groundwater sustainability agency. In the event a basin is not within the management area of a groundwater sustainability agency, the county within which the basin is located was presumed to be the groundwater sustainability agency for the basin. However, the county may decline to serve in this capacity (Water Code Section 19724).

The SGMA also requires DWR to categorize each groundwater basin in the state as high-, medium-, low-, or very low-priority (Water Code Sections 10720.7, 10722.4). All basins designated as high- or medium-priority basins must be managed by a groundwater sustainability agency under a groundwater sustainability plan that complies with Water Code Section 10727 *et seq.* If required to be prepared, groundwater sustainability plans must be prepared by January 31, 2020, for all high- and medium-priority basins that are subject to critical conditions of overdraft, as determined by DWR, or by January 31, 2022, for all other high- and medium-priority basins. In lieu of preparation of a groundwater sustainability plan, a local agency may submit an alternative that complies with the SGMA no later than January 1, 2017 (Water Code Section 10733.6).

California's Integrated Waste Management Act of 1989

The California Integrated Waste Management Act (CIWMA) of 1989 created the California Integrated Waste Management Board, now known as the California Department of Resources Recycling and Recovery (CalRecycle). CalRecycle is the agency designated to oversee, manage, and track California's 92 million tons of waste generated each year. CalRecycle provides grants and loans to help cities, counties, businesses, and organizations meet the State's waste reduction, reuse, and recycling goals. CalRecycle promotes a sustainable environment in which these resources are not wasted but can be reused or recycled. In addition to many programs and incentives, CalRecycle promotes the use of new technologies to divert resources away from landfills. CalRecycle is responsible for ensuring that waste management programs are carried out primarily through local enforcement agencies.

The CIWMA is the result of two pieces of legislation, AB 939 and SB 1322. The CIWMA was intended to minimize the amount of solid waste that must be disposed of through transformation and land disposal by requiring all cities and counties to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000.

The 50 percent diversion requirement is measured in terms of per-capita disposal expressed as pounds per day per resident and per employee. The per capita disposal and goal measurement system uses an actual disposal measurement based on population and disposal rates reported by disposal facilities, and it evaluates program implementation efforts.

Assembly Bill 1826 (Chapter 727, Statutes of 2014)

AB 1826 requires a business that generates 4 cubic yards or more of organic waste per week to arrange for recycling services for that organic waste in a specified manner. The bill also requires a business that generates 4 cubic yards or more of commercial solid waste per week, on and after January 1, 2019, to arrange for organic waste recycling services and, if CalRecycle makes a specified determination, decrease that amount to 2 cubic yards, on or after January 1, 2020. The bill requires each jurisdiction to report to CalRecycle on its progress in implementing the organic waste recycling program, and CalRecycle is required to review whether a jurisdiction is complying with this act.

AB 1826 requires CalRecycle to identify and recommend actions to address permitting and siting challenges and to encourage the continued viability of the state's organic waste processing and recycling infrastructure, in partnership with the California Environmental Protection Agency and other specified state and regional agencies. The bill also requires the department to cooperate with local jurisdictions and industry to aid with increasing the feasibility of organic waste recycling and to identify certain state financing mechanisms and state funding incentives and post this information on its website.

Regional and Local

City of Sacramento 2035 General Plan

The *Sacramento 2035 General Plan* was adopted in March 2015 (City of Sacramento 2015a). The Environmental Resources and Utilities elements contains the following goals and policies that are relevant to utilities.

Policy ER 1.1.3: Stormwater Quality. The City shall control sources of pollutants and improve and maintain urban runoff water quality through storm water protection measures consistent with the City's National Pollution Discharge Elimination System (NPDES) Permit.

GOAL U 1.1: High-Quality Infrastructure Services. Provide and maintain efficient, high-quality public infrastructure facilities and services throughout the city.

Policy U 1.1.1: Provision of Adequate Utilities. The City shall continue to provide and maintain adequate water, wastewater, and stormwater drainage utility services to areas in the city, and shall provide and maintain adequate water, wastewater, and stormwater drainage utility services to areas in the city that do not currently receive these City services upon funding and construction of necessary infrastructure.

Policy U 1.1.2: Citywide Level of Service Standards. The City shall establish and maintain service standards [Level of Service (LOS)] for water, wastewater, stormwater drainage, and solid waste services.

Policy U 1.1.3: Sustainable Facilities and Services. The City shall continue to provide sustainable utility services and infrastructure in a cost-efficient manner.

Policy 1.1.5: Growth and Level of Service. The City shall require new development to provide adequate facilities or pay its fair share of the cost for facilities needed to provide services to accommodate growth without adversely impacting current service levels.

Policy U 1.1.8: Joint-Use Facilities. The City shall support the development of joint-use water, drainage, and other utility facilities as appropriate in conjunction with schools, parks, golf courses, and other suitable uses to achieve economy and efficiency in the provision of services and facilities.

GOAL U 2.1: High-Quality and Reliable Water Supply. Provide water supply facilities to meet future growth within the city's Place of Use and assure a high-quality and reliable supply of water to existing and future residents.

Policy U 2.1.2: Increase Water Supply Sustainability. The City shall maintain a surface water/groundwater conjunctive use program, which uses more surface water when it is available and more groundwater when the surface water is limited.

Policy U 2.1.3: Water Treatment Capacity and Infrastructure. The City shall plan, secure funding for, and procure sufficient water treatment capacity and infrastructure to meet projected water demands.

Policy U 2.1.9: New Development. The City shall ensure that water supply capacity is in place prior to granting building permits for new development.

Policy U 2.1.10: Water Conservation Standards. The City shall achieve a 20 percent reduction in per-capita water use by 2020 consistent with the State's 20x20x20 Water Conservation Plan.

Policy U 2.1.11: Water Conservation Programs. The City shall implement conservation programs that increase water use efficiency, including providing incentives for adoption of water efficiency measures.

Policy U 2.1.15: Landscaping. The City shall continue to require the use of water-efficient and river-friendly landscaping in all development, and shall use water conservation gardens (e.g.,

Glen Ellen Water Conservation Office) to demonstrate and promote water conserving landscapes.

Goal U 3.1: Adequate and Reliable Sewer and Wastewater Facilities. Provide adequate and reliable sewer and wastewater facilities that collect, treat, and safely dispose of wastewater.

Policy U 3.1.1: Sufficient Service. The City shall provide sufficient wastewater conveyance, storage, and pumping capacity for peak sanitary sewer flows and infiltration.

Goal U 4.1: Adequate Stormwater Drainage. Provide adequate stormwater drainage facilities and services that are environmentally sensitive, accommodate growth, and protect residents and property.

Policy U 4.1.1: Adequate Drainage Facilities. The City shall ensure that all new drainage facilities are adequately sized and constructed to accommodate stormwater runoff in urbanized areas.

Policy U 4.1.4: Watershed Drainage Plans. The City shall require developers to prepare watershed drainage plans for proposed developments that define needed drainage improvements per City standards, estimate construction costs for these improvements per City standards, estimate construction costs for these improvements, and comply with the City's National Pollutant Discharge Elimination System (NPDES) permit.

Goal U 5.1: Solid Waste Facilities. Provide adequate solid waste facilities, meet or exceed State law requirements, and utilize innovative strategies for economic and efficient collection, transfer, recycling, storage, and disposal of refuse.

Policy U 5.1.1: Zero Waste. The City shall achieve zero waste to landfills by 2040 through reusing, reducing, and recycling solid waste; and using conversion technology if appropriate. In the interim, the City shall achieve a waste reduction goal of 75 percent diversion from the waste stream over 2005 levels by 2020 and 90 percent diversion over 2005 levels by 2030, and shall support the Solid Waste Authority in increasing commercial solid waste diversion rates by 30 percent.

Policy 6.1.5: Energy Consumption per Capita. The City shall encourage residents and business to consume 25 percent less energy by 2030 compared to the baseline year of 2005. (City of Sacramento 2015a)

Environmental Setting

This section identifies all pertinent changes to the environmental setting relevant to utilities and service systems in the 2020 LRDP Update plan area since publication of the 2010 LRDP Final EIR.

Study Area

The UC Davis Sacramento Campus is in the city of Sacramento. The 146-acre campus is 2.5 miles southeast of downtown Sacramento on Stockton Boulevard between V Street and Broadway in east Sacramento.

Utilities and Service Systems

Potable and Non-Potable Water

Potable water is supplied to the campus from the City of Sacramento domestic water system. An aboveground water tank is present on V Street in the vicinity of the Sacramento Campus. This tank contains potable water and is one of the City of Sacramento's 17 water storage facilities, each with a capacity of about 3 million gallons (City of Sacramento 2016). This water is used for domestic, fire

protection, Central Energy Plant, and irrigation uses. UC Davis owns and operates two onsite wells, which also supply irrigation water to the Sacramento Campus grounds.

Existing demand is approximately 147.7 million gallons of potable water and 28.3 million gallons of non-potable water (see Table 2-4 in Chapter 2, *Project Description*).

Campus Chilled Water and Steam Systems

The Central Energy Plant provides chilled and hot water for cooling and heating, and process steam to most campus buildings. Processed steam is used for various purposes including autoclave, cooking, and cleaning purposes. It is distributed by underground pipes from the Central Energy Plant to other campus buildings. The Central Energy Plant includes a chilled water system composed of multiple absorption and centrifugal chillers, with an operating capacity of 12,684 tons of water. The campus currently demands approximately 9,500 tons of capacity in the chilled water system (Affiliated Engineers, Inc. 2019). Steam production is used to create medium temperature water as well as process steam for distribution to the campus. The Central Energy Plant total steam production capability from the combined cycle turbine power plant and installed boiler capacity is 160,800 pounds per hour (lbs/hr). In 2019 the process steam demand was approximately 60,000 lbs/hr (Affiliated Engineers, Inc. 2019). Due to existing air permit requirements, only two of the four boilers are allowed to operate when the gas turbine is operating at full load. This reduces the allowable steam production capacity to 122,400 lbs/hr. The existing On-Campus Partner Buildings (the Courtyard by Marriott and the Ronald McDonald House) are not served by the Central Energy Plant.

Wastewater and Stormwater

The sanitary sewer system at the Sacramento Campus has been in use since 1929 and consists of over 9,000 linear feet of collection laterals ranging from 4 to 18 inches in diameter. All of the sewer mains within the campus boundaries, both sanitary sewer and combined sanitary sewer and stormwater systems, are owned and maintained by the City of Sacramento and are located within public utility easements that require coordination with the City for new construction activity or new connections (Affiliated Engineers, Inc. 2019).

The majority of the wastewater infrastructure on campus is a combined sanitary sewer and stormwater system. A portion of the campus infrastructure is stormwater only. The Sacramento Campus is exempt from the Municipal Stormwater Program for this stormwater-only portion of the campus and the amount of discharge is not monitored. The Sacramento Campus submits monthly reports with flow rate totals to the Sacramento Area Sewer District. The 2019 wastewater total was 7,371,855 gallons (Olaguez pers. comm.).

Wastewater from the campus is conveyed to the City of Sacramento combined sewer and stormwater facilities. It is treated at the Sacramento Regional Wastewater Treatment Plant (SRWTP), which is owned and operated by the Sacramento Regional County Sanitation District (Regional San). The SRWTP is south of the city limits in Elk Grove, approximately 7 miles south of the Sacramento Campus.

According to the City of Sacramento *2015 Urban Water Master Plan*, the combined sanitary sewer and stormwater system serves residences and businesses within 11,240 acres of the city. Approximately 7,540 acres in the downtown, East Sacramento, and Land Park communities contribute sanitary sewage and storm drainage flows to the system (City of Sacramento 2016:6–11).

The SRWTP is permitted to treat an average dry weather flow of 181 million gallons of wastewater per day (mgd) and a daily peak wet weather flow of 392 mgd. The long term planning effort¹ projects a population-based flow of 218 mgd (City of Sacramento 2015b:4-9). The combined sanitary sewer and stormwater system is composed of about 345 miles of pipes 4 to 120 inches in diameter that drain to the west to two large pump station facilities near the Sacramento River.

Other City facilities include an off-line storage facility, Pioneer Reservoir, that also serves as a primary treatment plant and the Combined Wastewater Treatment Plant (CWTP), another primary treatment plant with a capacity of 130 mgd. Pioneer Reservoir has a peak hydraulic capacity of approximately 350 mgd and a treatment capacity of about 250 mgd (City of Sacramento 2016:6-11). The Downtown Combined Sewers Upsizing Project is a 15-year program to upsize downtown sewers to reduce flooding and combined sewer outflows when complete, and to provide additional capacity. Major development projects within the combined sewer area are required to mitigate the additional sewage flows and the added impervious surface, which increases drainage runoff, or to pay the new combined sanitary sewer and stormwater system development fee, which funds this project (City of Sacramento 2015b:4-5).

A City-owned stormwater detention basin designed for 10-year flows is located on the Sacramento Campus. Stormwater flows from the western half and excess flows from the eastern half of the campus are detained onsite before they are discharged into the City's combined sewer system or to the American River. The existing campus land area is estimated to be approximately 80 percent impervious surfaces and 20 percent pervious surfaces. Additional information on water infrastructure is provided in Section 3.9, *Hydrology and Water Quality*.

Municipal Solid Waste

The UC Davis Department of Facilities Operations and Maintenance is responsible for the collection and disposal of solid waste on the UC Davis Sacramento Campus. As stated in Chapter 2, solid waste is separated into appropriate waste streams. Medical waste and hazardous chemical and radioactive waste are packaged and labeled and categorized for transport to appropriate off-campus disposal sites. The UC Davis landfill, at the western edge of the Davis Campus, closed in August 2012 and has a landfill closure plan in place. This landfill consists of a methane collection and monitoring system that utilizes collected landfill gas to power microturbines at the onsite UC Davis Biodigester facility (Ocheltree pers. comm.).

The UC Davis Sacramento Campus disposes of nonrecycled and nonhazardous solid wastes at Republic Services Elder Creek Transfer Station in Sacramento, where it is then transported to Forward landfill in Manteca (approximately 55 miles south). The Sacramento Campus, including On-Campus Partner Buildings, generates approximately 4,277 tons of solid waste per year (Ocheltree pers. comm.; California Air Pollution Control Officers Association 2017).

The campus is considered a Large Quantity Generator of hazardous waste and is subject to state and federal regulations affecting these facilities. The Campus generates and disposes of corrosive,

¹ The long-term planning effort, or "buildout" condition referenced in the City's sewer and treatment planning documents are based on buildout densities but were not assigned any particular timeframe. According to the *Sacramento Regional County Sanitation District Interceptor Sequencing Study*, the existing service area could reach buildout conditions as early as 2060 and as late as the year 2160 (Sacramento Regional County Sanitation District 2013:21). Therefore, buildout conditions referenced in these planning documents will encompass the implementation of the 2020 LRDP Update in 2040.

reactive, ignitable, metallic (e.g., chromium, lead, mercury, and silver), and other wastes on the Resource Conservation and Recovery Act (RCRA) list (i.e., primarily used and spent solvents). Medical waste and hazardous chemical and radioactive waste disposal and handling are discussed in Section 3.8, *Hazards and Hazardous Materials*, of this Supplemental EIR.

Electricity and Natural Gas

The Central Energy Plant provides normal and emergency electrical power to the Sacramento Campus buildings that are owned and operated by UC Davis. The On-Campus Partner Buildings purchase electricity and natural gas from SMUD and Pacific Gas and Electric Company (PG&E). As described in Section 3.7, *Greenhouse Gas Emissions*, buildings not connected to the Central Energy Plant directly purchase natural gas from PG&E. PG&E provides natural gas to the campus from gas distribution piping mains on V Street, Stockton Boulevard, Broadway, 45th Street, Y Street, and 2nd Avenue. A 6-inch transmission main extension was built in 1997 from an existing transmission main located at 24th and T Street to 49th and 2nd Avenue to provide transmission level service to the campus.

The Central Energy Plant normally operates to follow the electrical load of the campus with some power continuously exported to SMUD. However, in the event of a normal or forced outage of the gas turbine, the entire campus load is served by SMUD utility power import. Several other buildings on campus also purchase minor amounts of electricity from SMUD or PG&E.

Under existing conditions, the campus demands approximately 15.8 million kilowatt-hours of electricity and 11.7 million therms of natural gas per year (see Sections 3.2 *Air Quality* and 3.7 *Greenhouse Gases* of this Supplemental EIR).

Telecommunications

The Sacramento Campus owns and operates its own telecommunications infrastructure. The underground infrastructure and cable plant currently support over 12,000 faculty, staff, students, residents and fellows' data needs (Affiliated Engineers, Inc. 2019:10-1). Education and health care generate and consume a greater than average amount of bandwidth compared to other land uses such as residential, commercial, or industrial, due to the amount of technology used on the campus. The Sacramento Campus' Utility Master Plan (UMP) predicts that additional physical infrastructure in the form of optical fiber and underground conduit is required to support the campus (Affiliated Engineers, Inc. 2019:10-4).

Commercial telecommunication services are also provided to some campus buildings, which include both wired and wireless services.

3.16.2 Environmental Impacts

This section describes the environmental impacts associated with utilities and service systems that would result from implementation of the 2020 LRDP Update. It describes the methods used to determine the effects of the 2020 LRDP Update and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, if applicable.

Methods for Analysis

All elements of the 2020 LRDP Update were analyzed by comparing baseline conditions, as described in Section 3.16.1, *Environmental Setting*, to future 2040 conditions. Evaluation of potential utilities and service system impacts is based on a review of existing documents and studies that address utilities and service systems in the vicinity of the plan area. The analysis focuses on issues related to the physical changes to utility and service system facilities, water supply facilities, wastewater treatment facilities, and solid waste facilities that could cause environmental impacts.

The UMP studied three operational scenarios at the Central Energy Plant to serve the anticipated campus load growth. The “Business as Usual (CCHP With Cogeneration)” scenario was selected for the purposes of this CEQA analysis, based on direction from UC Davis staff (Davis pers. comm.).

Potable and Non-Potable Water

The UMP provided information on existing infrastructure for potable and non-potable water, including wells used for irrigation and emergency use. Existing (2019) water use data was provided by UC Davis staff (Olaguez pers. comm.).

Future water use (2040) was projected in conjunction with the air quality and greenhouse gas emissions analysis (Sections 3.2, *Air Quality*, and 3.7, *Greenhouse Gases*, of this Supplemental EIR, respectively). The projections consider information from the UMP, information on current water usage provided by UC Davis staff. Additional information on this methodology including CalEEMod outputs can be found in Appendix D of this Supplemental EIR.

Campus Chilled Water and Steam Systems

The UMP analyzes major utilities and their ability to serve the Sacramento Campus considering projected future growth. The UMP considers existing utility conditions on the UC Davis Sacramento Campus that are provided by the Central Energy Plant, projected campus growth, projected utility demand growth based on projected campus growth, and the ability of existing campus utilities to meet projected increases in demand for campus chilled water and steam systems (Affiliated Engineers, Inc. 2019). On-campus partner buildings are not included because they are not served by the Central Energy Plant. The UMP is based on an increase of 1.8 million gross square feet (gsf) over current Central Energy Plant operations. This projection is consistent with the anticipated growth in gsf to be served by the Central Energy Plant with full implementation of the 2020 LRDP Update (refer to Appendix D).² Accordingly, assumptions for future Central Energy Plant operations and provision of campus chilled water and steam systems with the implementation of the 2020 LRDP

² The UMP assumed the additional 1.8 million gsf would be added by 2030, whereas the implementation year for the 2020 LRDP Update is 2040. While growth is projected to occur more slowly under the 2020 LRDP Update than the UMP, the total gsf served by the Central Energy Plant, and thus electrical demand, is the same in the two plans.

Update are based, in part, on the UMP. UC Davis staff were also consulted on appropriate growth assumptions.

Wastewater and Stormwater

The UMP provides information on existing infrastructure for wastewater and stormwater, which serves the entire campus, including On-Campus Partner Buildings. Existing (2019) wastewater data was provided by UC Davis staff (Olaguez pers. comm.). As stated above, while most of the wastewater infrastructure on campus is a combined sanitary sewer and stormwater system, a portion of the campus infrastructure is for stormwater only and is exempt from the Municipal Stormwater Program. Because discharge from this portion is not monitored, this data is not included in the analysis.

The UMP states that projected sanitary sewer flows would be 1,954 gallons per minute (gpm), which is 695 gpm above baseline conditions. Future sanitary sewer demands are assumed to be directly proportional to water demands, with sewer flows at 95 percent of the demand levels of domestic water flows. Water usage (potable and non-potable) is projected to be approximately 176.1 million gallons in 2040. Therefore, wastewater is anticipated to be approximately 167.3 million gallons in 2040.

Infrastructure improvements that would be required on-campus are planned for in the UMP. City of Sacramento infrastructure capacity was determined by reviewing the City's 2015 *Urban Water Management Plan* (UWMP) (City of Sacramento 2016). The UC Davis Sacramento Campus is considered a high water user in the UWMP.

Municipal Solid Waste

The UC Davis Sacramento Campus provided information on existing (2019) solid waste generation. Projected (2040) solid waste was determined as part of the air quality and greenhouse gas emissions analysis in Sections 3.2 and 3.7, respectively. UC Davis staff were also consulted on appropriate growth assumptions. Methodology for projected utility usage is described further in Sections 3.2 and 3.7, and Appendix D of this Supplemental EIR. Solid waste services apply to the entire campus, including On-Campus Partner Buildings.

Electricity and Natural Gas

The UMP indicates that electric power load served by the Central Energy Plant is projected to grow from 17.2 megawatts under existing conditions to 19.4 megawatts with implementation of the 2020 LRDP Update (growth of 2.2 megawatts). This projection accounts for energy benefits achieved by demand side load reduction measures, pursuant to the UC Sustainable Practices Policy. UC Davis engineers predict an 11 percent increase in natural gas consumption at the Central Energy Plant to serve the additional 2.2 megawatts of electric power load associated with implementation of the 2020 LRDP Update (Musat pers. comm.). The Central Energy Plant does not serve existing On-Campus Partner Buildings. Existing and projected electricity and natural gas for the entire campus, including On-Campus Partner Buildings, was generated as part of the air quality and greenhouse gas emissions analysis in Sections 3.2 and 3.7, respectively, of this Supplemental EIR. UC Davis staff were also consulted on appropriate growth assumptions. Methodology for projected utility usage is described further in Sections 3.2 and 3.7, and Appendix D of this Supplemental EIR. Electricity and natural gas projections associated with Aggie Square Phase I are included in this analysis but are

also discussed separately in Volume 2 of this Supplemental EIR. Aggie Square Phase I would be served by purchased electricity and natural gas and not by the Central Energy Plant.

Telecommunications

Information on existing and future telecommunications infrastructure is provided from projections in the UMP.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the 2020 LRDP Update would be considered to have a significant effect if it would result in any of the conditions listed below.

- Relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
- Creation of a need for new or expanded entitlements or resources for sufficient water supply available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.
- A determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Generation of solid waste in exceedance of state or local standards or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
- Failure to comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Impacts and Mitigation Measures

Impact LRDP-UT-1: Relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects

While the implementation of the 2020 LRDP Update would increase the Sacramento Campus population and generate a corresponding increase in demand for utilities, the campus and the surrounding area have adequate facilities to accommodate this demand and would not require the relocation or construction of new facilities. This impact would be **less than significant**.

Potable and Non-Potable Water

Implementation of the 2020 LRDP Update would require more water for domestic use, fire water, and irrigation than under existing conditions. Table 3.16-1 shows the increase from the existing conditions to 2040 conditions.

Table 3.16-1. Campus Water Demand

Utility	Existing Consumption (2019)	Projected Consumption (2040)	Change
Potable water (gallons)	147,746,630	260,483,018	112,736,388
Non-potable water (gallons)	28,342,170	70,520,476	42,178,306

Source: Air Quality/Greenhouse Gas data collection effort.

As stated in the UMP, the existing water systems have sufficient supply to meet the increased demand associated with future campus improvements (Affiliated Engineers, Inc. 2019:1-11). The existing water infrastructure throughout the Sacramento Campus would provide the distribution infrastructure necessary to provide water service for future uses. However, it is likely that new onsite improvements would be necessary to provide adequate service for localized increases in water demand. Construction of new water pipes would require demolition of surface improvements and excavation activities, which are typically done during the construction of any new buildings. Future construction of water infrastructure would adhere to existing laws and regulations, and the water conveyance infrastructure would be appropriately sized for each site-specific development, which includes potable water, domestic irrigation, and fire flow demands. These improvements would occur on the Sacramento Campus, and are not anticipated to disturb neighboring communities or result in other significant environmental effects. Impacts related to grading and other construction activities are addressed in other sections of this Supplemental EIR, including Section 3.2, *Air Quality*, Section 3.2, *Biological Resources*, Section 3.4, *Cultural Resources*, and Section 3.11, *Noise*. Connections and extensions of these water and wastewater facilities would occur primarily within roadways or other areas that are already developed or disturbed, and which are unlikely to have sensitive biological or cultural resources.

In addition, the two water pumps use the underground aquifer as water storage (rather than underground tanks) for irrigation and for emergency situations. The required storage capacity of the underground aquifer is 126,900 gallons to meet the needs of the campus. The 1,500 gpm well pump would meet this capacity by only running for 85 minutes. No improvements to the water pumps or wells would be required to support the 2020 LRDP Update. This impact would be **less than significant**.

Campus Chilled Water and Steam Systems

According to the UMP, the campus peak process steam load is projected to grow to 7,500 pounds per hour. The existing cogeneration steam system and HP boiler have sufficient capacity for this system (Affiliated Engineers, Inc. 2019:1-11). Regarding chilled water, the UMP determined that additional capacity is needed to handle the future load of chilling capacity, condenser water demand, medium temperature hot water demand. Improvements entail installing new equipment such as an electric chiller, a deaerator, secondary hot water pumps, and an emergency diesel generator. No new campus distribution piping or conduit would be required to support the 2020 LRDP Update. Upgrading the Central Energy Plant to provide sufficient capacity to the Sacramento Campus is part of the implementation of the 2020 LRDP Update. These improvements would occur within the boundaries of the Sacramento Campus, and are not anticipated to disturb adjacent neighborhoods or result in other significant environmental effects. Impacts related to grading and other construction activities are addressed in other sections of this Supplemental EIR, including Sections 3.2, 3.3, 3.4, and 3.11. This impact would be **less than significant**.

Wastewater and Stormwater

According to the UMP, the existing utility systems related to sanitary sewer and stormwater are sufficient to support the entire campus through implementation of the 2020 LRDP Update (Affiliated Engineers, Inc. 2019:1-11). New connections would be required for planned projects within the 2020 LRDP Update, including new or relocated sewer pipes at the Cancer Center, Eye Center, MIND Dry Lab, and future Aggie Square Phase I. The UMP indicates that proposed sewer pipe would be installed in the northern portion of the campus along 45th Street between the main hospital parking lot and the water tower, beneath the parking lot to the east of the water tower, along Y Street between 48th and 49th Streets, and on 2nd Avenue near 45th Street (Affiliated Engineers, Inc. 2019:287). Impacts related to relocating or installing sewer mains and pipeline and other construction activities are addressed in other sections of this Supplemental EIR, including Sections 3.2, *Air Quality*, 3.3, *Biological Resources*, 3.4, *Archaeological, Historical, and Tribal Cultural Resources*, and 3.11, *Noise*. These on-campus upgrades would occur within the boundaries of the Sacramento Campus and are not anticipated to disturb neighbors or result in any other environmental impacts that are not already analyzed in this Supplemental EIR. See Section 3.9 for additional analysis related to on-campus wastewater and stormwater facilities.

As stated previously, the campus discharges wastewater to the City's combined sanitary sewer and stormwater system, which is ultimately treated at SRWTP. The existing SRWTP permitted capacity is 181 mgd and a daily peak wet weather flow of 392 mgd. The average dry weather flow is approximately 150 mgd. The SRWTP 2020 Master Plan states that additional facilities are needed to treat future process capacity, and this is achieved by adding future treatment process facilities to mirror existing facilities. The SRWTP 2020 Master Plan recommends implementation of cost effective programs including improvements in source control, evaluation of watershed offsets and an expanded water recycling program (Sacramento Regional Wastewater Treatment Plant 2008: 6, 10).

Existing and proposed treatment facilities were designed for gradual expansion as future wastewater flows increase. Some existing facilities have available capacity for future flows and loads, while other facilities would require expansion (City of Sacramento 2015b: 4-9). Construction of the EchoWater Project is underway for a project to rehabilitate the older facilities at the SRWTP to increase capacity, and when the project is complete (2023), the SRWTP will be the largest advanced wastewater treatment facility in the United States (Sacramento Regional County Sanitation District 2019).

Currently, the SRWTP treats 115 million gallons of wastewater per day. The 2020 LRDP Update is anticipated to generate approximately 167.3 million gallons annually in 2040, which averages approximately 458,400 gallons of wastewater per day. This represents approximately 0.3 percent of the amount the SRWTP currently treats, and it is reasonable to assume that the SRWTP infrastructure would be significantly improved by 2040, with completion of the EchoWater and other projects.

No major improvements of the City's water and sewer lines would be required to serve the campus with implementation of the 2020 LRDP Update. However, it is possible that project-specific improvements to individual distribution piping near the campus may be required specifically to accommodate the increase in water demand and wastewater generation as the 2020 LRDP Update is implemented. Impacts related to project specific improvements and other construction activities are addressed in other sections of this Supplemental EIR, including Sections 3.2, 3.4, and 3.11. These on-

campus upgrades would occur within the boundaries of the Sacramento Campus and are not anticipated to disturb neighbors or result in any other environmental impacts that are not already analyzed in this Supplemental EIR. Impacts related to both on-campus and off-campus stormwater infrastructure would not result in significant effects on the environment, and would be **less than significant**.

Electricity and Natural Gas

Table 3.16-2 shows the existing and projected electricity and natural gas usage for the Sacramento Campus, including On-Campus Partner Buildings.

Table 3.16-2. Campus Electricity and Natural Gas Demand

Utility	Existing Consumption (2019)	Proposed Consumption (2040)	Change
Electricity (kWh)	15,833,943	60,940,412	45,106,469
Natural gas (therm)	11,698,753	13,016,053	1,317,300

Source: Air Quality/Greenhouse Gas data collection effort.

Note: Existing and proposed consumption includes the entire Sacramento Campus, including On-Campus Partner Buildings.

kWh= kilowatt-hour.

The Central Energy Plant provides electricity to the campus buildings owned and operated by UC Davis, and uses natural gas provided by PG&E. The On-Campus Partner Buildings use purchased electricity and natural gas from SMUD and PG&E. The UMP assumes an increase of 1.8 million gsf over current Central Energy Plant operations. This projection is consistent with the anticipated growth in gsf to be served by the Central Energy Plant with implementation of the 2020 LRDP Update (refer to Table 2-3 in Chapter 2). All existing fossil fuel powered stationary equipment at the Central Energy Plant would be maintained and continue to operate with implementation of the 2020 LRDP Update.

The UMP indicates that electric power load served by the Central Energy Plant is projected to grow from 17.2 megawatts under existing conditions to 19.4 megawatts with implementation of the 2020 LRDP Update (a growth of 2.2 megawatts). This projection accounts for energy benefits achieved by demand side load reduction measures, pursuant to the UC Sustainable Practices Policy. Additional natural gas consumed to serve this added load is proportional to the heat input to the turbine. There is approximately a 5 percent increase in natural gas usage for every 1 megawatt of additional power output (Musat pers. comm.). UC Davis engineers project an 11 percent increase in natural gas consumption at the Central Energy Plant to serve the additional 2.2 megawatts of electric power load associated with implementation of the 2020 LRDP Update (Musat pers. comm.). No substantial physical change to the Central Energy Plant would be needed to provide this additional electrical power. The primary user of natural gas on the campus is the combined cycle turbine power plant at the Central Energy Plant. Per the UC Sustainable Practices Policy, no new buildings (other than On-Campus Partner Buildings and Aggie Square Phase I) constructed under the 2020 LRDP Update would purchase natural gas from PG&E.

The Central Energy Plant will continue to provide natural gas and electricity to the campus buildings owned and operated by UC Davis, with planned upgrades that would occur as needed to serve the campus. The existing On-Campus Partner Buildings will continue to purchase natural gas and

electricity from PG&E and SMUD. The future Aggie Square Phase I project would also purchase gas and electricity from PG&E and SMUD, and the developer of Aggie Square Phase I would work with these agencies to provide any necessary upgrades. No new infrastructure is expected to be necessary to deliver the electricity and natural gas. This impact would be **less than significant**.

Telecommunications

The UC Davis Sacramento Campus owns and operates its own telecommunications infrastructure (e.g., telecommunications lines and conduits, utility boxes, and electronic equipment located in existing buildings). The UMP concluded that there is not sufficient fiber to support the entire campus. A new fiber ring is planned for installation, which entails adding additional fiber-optic lines to the existing conduit, and no trenching or excavation would occur. Some expansion of the existing telecommunications infrastructure may be necessary to serve the new development included as part of the 2020 LRDP Update. However, the telecommunications infrastructure necessary to serve the new facilities are evaluated throughout this document as part of the analysis of the new facilities and would not result in substantial physical changes. Therefore, the impact would be **less than significant**.

The 2010 LRDP EIR found that effects on water, wastewater treatment, stormwater drainage, electric power, natural gas, and telecommunications facilities due to implementation of the 2010 LRDP would be less than significant. Therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-UT-2: Creation of a need for new or expanded entitlements or resources for sufficient water supply to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years

While the implementation of the 2020 LRDP Update would increase the campus population and building square footage and generate a corresponding increase in demand for water, water conservation strategies are expected to partially offset the increased demand. The increased demand for water would not require new or expanded entitlements. Therefore, this impact would be **less than significant**.

With implementation of the 2020 LRDP Update, the onsite daily population would increase, which would result in greater demand for potable water. Additional non-potable water demand would occur as a result of an increase in open space (approximately 3 acres). Table 3.16-1 above shows the existing and projected water demand. Potable water is supplied to the campus from the City of Sacramento domestic water system. The University owns and operates two onsite wells, which supply irrigation water to the Sacramento Campus grounds and can be used for emergency purposes.

The City's water system is adequate to meet existing demands, and the City continues to make improvements to meet future demands and improve reliability. Furthermore, the combination of groundwater and surface water (from the American River) results in a highly reliable water source for Sacramento (City of Sacramento 2016:7-2).

As stated under Impact LRDP UT-1, Regional San is currently developing the EchoWater Project, which is anticipated to be complete by the year 2023. Regional San is also undergoing multiple recycled water projects to develop its recycled water supply.

While implementing the 2020 LRDP Update, the campus also would implement sustainability strategies consistent with the UC Sustainable Practices Policy and the campus Climate Action Plan. The Climate Action Plan lists strategies to minimize campus water consumption, including water-efficient landscaping, fixture retrofits, efficient fixtures in new buildings, education, and energy conservation initiatives that would minimize water use. This analysis assumes that in 2025, approximately 50 percent of water fixtures in existing buildings would be replaced with new water-conserving fixtures.

While this Supplemental EIR relies on information from the year 2019 as the baseline condition, it should be noted that the difference in population and growth projections between the 2010 LRDP Final EIR and baseline condition is incremental (a population increase of approximately 1,500, and an increase of approximately 500,000 square feet). Growth projections used in the City's UWMP were based on the City's land use designations and land use acreages. The City's 2015 UWMP projected increases in overall water demand through 2040 due to increases in population but decreases in per capita water use as the result of continued and expanded water conservation efforts (City of Sacramento 2016).

With the continued and expanded water conservation efforts described in the UWMP, the City has sufficient water supplies to meet projected water demands during a normal year with the use of both surface and groundwater entitlements (City of Sacramento 2016). The *Sacramento 2035 General Plan* found that the City's water entitlements are sufficient to serve the entire city (including future expansions of the city limits) and also provide water to other local providers in need of water supply. Further expansion of the City's water treatment plants will occur as needed to support future water demands (City of Sacramento 2015a). The 2020 LRDP Update would not trigger the need for any such expansions.

While the implementation of the 2020 LRDP Update would create an increase in the Sacramento Campus's demand for water, it is an incremental increase above what was analyzed in the 2010 LRDP Final EIR. According to the UWMP, the City has sufficient water supply exists to meet this demand. The increase in demand as a result of implementation of the 2020 LRDP Update would compute to approximately 475 acre-feet, which is approximately 0.15 percent of the City of Sacramento's annual water supply of 326,800 acre-feet per year. Furthermore, projects implemented as part of the 2020 LRDP Update would comply with the strategies to minimize water consumption described in the UC Sustainable Practices Policy. For these reasons, the increased water demand would not result in the need for the City of Sacramento to obtain additional entitlements to serve the campus at full implementation of the 2020 LRDP Update. The impact would be **less than significant**.

The 2010 LRDP EIR found that effects on water supply due to implementation of the 2010 LRDP would be less than significant. Therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-UT-3: A determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments

Development associated with implementation of the 2020 LRDP Update would increase wastewater but would not require any substantial infrastructure improvements at SRWTP. Therefore, this impact would be **less than significant**.

The majority of the campus is served by a network of combined sewer pipes maintained by the City of Sacramento. These pipes convey a combination of stormwater and sanitary sewage from the campus to public wastewater treatment plants. The largest combined sewer main is 72 inches in diameter (Affiliated Engineers, Inc. 2019:11-1). The combined sewers are not near planned buildings.

The 2030 Office of Statewide Health Planning and Development mandate (Section 727.1 of the 2016 California Plumbing Code), requires 72 hours of sewage and liquid waste storage in onsite tanks for acute-care facilities. The required storage volume for sanitary sewage is the same as volume of emergency domestic water. At least one temporary or permanent storage facility for sewage storage needs to be provided for each sewer lateral because there are several sanitary sewer laterals serving the campus acute care facilities.

The campus contains a combined storm-sewer overflow system that consists of a combined sewer main under Y Street connecting to the existing main under Stockton Boulevard, and ultimately flows to a concrete storage tank. In normal operations, no combined stormwater-sanitary sewage flows to the storage tank. When the combined sewer hydraulic grade elevation is above the sewer high point, excess combined sewage flows toward the tanks. A lift station at the north end of the storage tanks pumps stored combined sewage to another combined sewer under V Street, which has a higher capacity than the Stockton Boulevard and Y Street combined sewers. To maintain the current operation of the combined sewer overflow system, future connections or demand flows would be directed to the Y Street section of combined sewer. Under future development, no direct connection would be made to the combined sewer section that flows toward the storage tanks. According to the Utility Master Plan, no expansion of facilities or wastewater piping is planned for the Central Energy Plant, Stockton Boulevard Facilities, and the Broadway Building (Affiliated Engineers, Inc. 2019:11-7).

New sewer pipes and sewer mains would be replaced or added to serve new projects that are part of the 2020 LRDP Update. At the Cancer Center, new sewer pipes would be constructed to serve the expansion and would connect to existing campus sewer pipes. The capacity would not be increased. The Eye Center would require the relocation of a new 6-inch sewer service lateral. Within the Education, Research, and Housing land use designation, wastewater facilities will be constructed and will drain to the public sewer under 2nd Avenue. The MIND Dry Lab will require relocation of an existing sewer main and new 6-inch sewers will support both this facility and MIND Lab II. Additional information is provided in Section 3.9 of this Supplemental EIR, as well as in the discussion of Impact LRDP-UT-1 above.

The development proposed in the 2020 LRDP Update would increase the volume of wastewater conveyed to the City of Sacramento combined sewer and stormwater facilities, which would be treated at the SRWTP. As stated under Impact LRDP UT-1, Regional San is currently developing the EchoWater Project, which is anticipated to be complete by the year 2023, and no additional improvements would be necessary. This impact would be **less than significant**.

The 2010 LRDP EIR found that effects on wastewater treatment provider would be less than significant with mitigation. Therefore, the implementation of the 2020 LRDP Update would not result in a new or more severe impact than disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-UT-4: Project-related exceedance of state or local solid waste standards or of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals

While the implementation of the 2020 LRDP Update would increase the campus population and building square footage and generate a corresponding increase in solid waste, the UC Sustainable Practices Policy is expected to reduce waste and partially offset the increased demand for landfill capacity. The increased demand for landfill space would not require new or expanded entitlements. Therefore, this impact would be **less than significant**.

Generation of solid waste is expected to increase as the number of facilities and on-campus population increase with implementation of the 2020 LRDP Update. Similar to existing conditions, all non-recycled and nonhazardous solid wastes would be disposed of at Republic Services Elder Creek Transfer Station in Sacramento. Approximately 4,374 tons of solid wastes from the Sacramento Campus were disposed of at the landfill in 2019, and similar quantities of wastes from the campus were disposed of at the landfill in previous years. The new population added to the campus under the 2020 LRDP Update would generate 2,292 additional tons of solid waste per year. With implementation of the 2020 LRDP Update, the Sacramento Campus would generate approximately 6,666 tons per year, or 18.26 tons per day.

Solid waste would continue to be separated into appropriate waste streams. Nonrecycled and nonhazardous wastes would continue to be disposed of at Republic Services Elder Creek Transfer Station in Sacramento through the year 2036.

Expansion is planned for the Forward Landfill in Manteca. In 2018, a Supplemental EIR for the expansion of the Forward Landfill project was adopted. The expansion would increase the total landfill capacity to 35 million cubic yards and allow disposal at the landfill to continue until the year 2036, approximately (San Joaquin County Community Development Department 2018:I-4). Because Forward Landfill is anticipated to closed before implementation of the 2020 LRDP Update, it is assumed that waste will be transported to Foothill Landfill in San Joaquin County (Ocheltree pers. comm.) Although it is not subject to CIWMA the University of California has adopted the UC Sustainable Practices Policy, which sets goals to reduce waste generation. The Sacramento Campus is aiming to establish a waste reduction goal by the end of the 2020 calendar year. On average, the Sacramento Campus has reduced approximately 15,000 pounds per month of waste in 2020 compared to 2019 (Davis pers. comm.) The UC Sustainable Practices Policy also encourages recycling of construction waste, and the Sacramento Campus is implementing a new recycling program. Together these policies would minimize the amount of solid waste that would go to Forward Landfill in Manteca.

In addition, the City of Sacramento committed to the goal of achieving 70 percent waste reduction by 2020 and zero waste to landfills by 2040. To help reach this goal, the City has adopted policies to

recycle as many waste materials as possible, restrict purchase of bottled water, use recycled materials (paper), and increase public outreach.

With the implementation of the 2020 LRDP Update, the campus would generate more solid waste than existing conditions. There is adequate capacity available in the Forward Landfill to serve the campus through the year 2036, and expansion for the landfill is already planned and has undergone environmental review. After the year 2036, Foothill Landfill would serve the Sacramento Campus. The City of Sacramento has committed to achieving zero waste to landfills by 2040. In addition, compliance with the UC Sustainable Practices Policy would continue to reduce landfill contributions. The impact would be **less than significant**.

The 2010 LRDP EIR found that effects on landfill capacity would be less than significant and, therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

Impact LRDP-UT-5: Inconsistency with federal, state, and local management and reduction statutes and regulations related to solid waste

The 2020 LRDP Update is not subject to the waste reduction targets of the UC Sustainable Practices Policy because, as a medical center, the Sacramento Campus is exempt. Therefore, this impact would be **less than significant**.

As discussed in Impact LRDP-UT-4, the solid waste generated by the UC Davis Sacramento Campus with the implementation of the 2020 LRDP Update is anticipated to be disposed of at the Forward Landfill in Manteca through the year 2036, and then the campus would need to use another landfill in the area that has sufficient capacity to serve the campus through the implementation of the 2020 LRDP Update. The University of California has adopted the UC Sustainable Practices Policy, which sets ambitious waste reduction targets that are consistent with the requirements of CIWMA, AB 341, SB 1374, and AB 1826. Medical centers are exempt from these waste reduction targets.

As noted above in Section 3.16.1, the University, a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's educational purposes.

Although the University is not subject to state and local regulations related to solid waste, development associated with implementation of the 2020 LRDP Update would comply with the UC Sustainable Practices Policy, which encourages waste reduction and diversion programs and is consistent with the management and reduction regulations related to solid waste, such as CIWMA, AB 341, SB 1374, and AB 1826. The 2020 LRDP Update will not change land uses and will continue to be in compliance with these existing regulations. The impact would be **less than significant**. Information on hazardous waste is in Section 3.8, *Hazards and Hazardous Materials*.

The 2010 LRDP EIR found that effects related to solid waste generation and landfill capacity would be less than significant and, therefore, the 2020 LRDP Update would not result in a new or more severe impact than previously disclosed in the 2010 LRDP Final EIR.

Mitigation Measures

No mitigation measures are necessary.

4.1 CEQA Requirements

The California Environmental Quality Act (CEQA) Guidelines (California Code of Regulations [CCR] Section 15130) requires that an EIR discuss the cumulative impacts of a project. A project's contribution to a cumulative impact is considered significant when the project's incremental effect is "cumulatively considerable." The definition of cumulatively considerable is provided in CCR Section 15065(a)(3) as follows.

"Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

According to the CEQA Guidelines (CCR Section 15130[b]),

The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

For purposes of this Supplemental EIR, the project would have a significant cumulative effect if it meets either one of the following criteria.

- The cumulative effects of related projects (past, current, and probable future projects) without the project are not significant but the project's incremental impact is substantial enough, when added to the cumulative effects, to result in a significant impact.
- The cumulative effects of related projects (past, current, and probable future projects) without the project are already significant and the project represents a considerable contribution to the already significant effect. The standards used herein to determine "considerable contribution" are that the impact either must be substantial or must exceed an established threshold of significance.

Mitigation measures are to be developed, where feasible, to reduce the project's contribution to cumulative effects such that the contribution is not considerable.

This cumulative analysis assumes that all mitigation measures identified in Sections 3.1 through 3.16 to mitigate project impacts are adopted, unless otherwise specified. Analysis presented in this chapter determines whether, after adoption of project-specific mitigation, the residual impacts of the project would cause a cumulatively significant impact or would contribute considerably to existing or anticipated (without the project) cumulatively significant effects.

4.2 Scope of the Cumulative Analysis

The geographic area that could be affected by development of the project varies depending on the type of environmental resource being considered. The general geographic area associated with various environmental effects of project construction and operation defines the boundaries of the area used for compiling the list of projects considered in the cumulative impact analysis. Table 4-1 lists the general geographic areas associated with the different resources addressed in this Supplemental EIR and lists those evaluated during cumulative analysis.

Table 4-1. Geographic Scope of Cumulative Impacts

Resource Issue	Geographic Area
Aesthetics	Local (plan area and surrounding public viewpoints)
Air Quality	Regional (Sacramento Metropolitan Air Quality Management District—pollutant emissions that have regional effects) Local (immediate vicinity—pollutant emissions that are highly localized such as carbon monoxide)
Archaeological, Historical, and Tribal Cultural Resources	Local
Biological Resources	Regional (<i>South Sacramento County Habitat Conservation Plan</i>) and local
Energy	Regional (Sacramento Municipal Utility District [SMUD] and PG&E energy grid within Sacramento County)
Geology, Soils, and Seismicity	Local
Greenhouse Gas Emissions	Global
Hazards and Hazardous Materials	Local (immediate project vicinity)
Hydrology and Water Quality	Regional and local
Land Use and Planning	Local (City of Sacramento)
Noise	Local (immediate project vicinity where effects are localized)
Population and Housing	Local and regional
Public Services	Local service areas
Recreation	Local
Transportation and Circulation	Regional and local
Utilities and Service Systems	Local service areas

As noted in Table 4-1, the potential geographic scope of some cumulative effects is more localized than others. To account for both regional and localized cumulative impacts, this Supplemental EIR uses regional growth projections to assess regionally cumulative impacts and the list method to assess more localized cumulative impacts. Table 4-2 lists past, present, and future development projects near the Sacramento Campus that are considered in the analysis of cumulative impacts. This list is not all-inclusive of projects in the region; rather, it identifies projects constructed, approved, or under review within approximately 1 mile of the project site that have some relation to the environmental impacts of construction and operation of potential uses associated with 2020 LRDP Update implementation. The list of projects used for this cumulative analysis is based on

information provided by the City of Sacramento about approved and pending projects. Table 4-2 also lists approved and pending UC Davis Sacramento Campus projects considered part of the 2010 LRDP.

Table 4-2. Cumulative Projects List

Project Name/ Number	Developed or Proposed Land Use	Description/Size (Acreage and/or Dwelling Units)	Built/ Approved/ Proposed
UC Davis Sacramento Campus			
ACC Eye Center	Hospital building expansion	Expansion of existing ACC building, addition of Eye Center and changes to parking lot 18	Approved
Rehabilitation Hospital	Hospital building	Demolition of existing building and construction of 58,623-gross square foot inpatient rehabilitation hospital	Approved
Parking Structure 4	Parking structure	Construction and operation of new 1,221-stall parking structure, removal of the roundabout, new traffic signal, reconfigure parking lot 18, and other improvements	Approved
North/South Hospital Wing and East Wing Façade	Demolition and facade improvements	Demolition of the 235,000-square foot North/South Hospital Wing	Approved
Housestaff Demo	Demolition	Demolition of the 20,000-square foot Housestaff building	Approved
City of Sacramento			
Downtown Mobility Project	Roadway improvements	Convert 5th Street (from X Street to H Street) and I Street (from 16th Street to 21st Street) from one-way to two-way streets, and construct bicycle lanes on I Street between 12th and 16th Streets	Approved
Ramona Avenue Extension Phase 1 Improvements	Roadway improvements	Extend Ramona Avenue from its current terminus at Brighton Avenue to a new signalized intersection at Folsom Boulevard; a roundabout at the Brighton Avenue intersection and an at-grade crossing	Approved
DR20-011	Mixed-use building	Construction of a three-story mixed-use building with two levels of apartments (total 12 dwelling units) over 2,500 square feet of retail/commercial space on approximately 0.11 vacant acres	Proposed
DR20-057	Apartment building	Develop a six-unit apartment building from the existing two-story structure located in the C-2-SPD zone	Proposed
DR20-040	Mixed-use building	Construction of a 29,000-square foot, four-story mixed-use building with 38 dwelling units on three parcels in the C-2-SPD zone	Proposed

Sources: UC Davis Sacramento Campus Facilities Department; City of Sacramento 2020a, 2020b.
ACC = Lawrence J. Ellison Ambulatory Care Center; C-2-SPD = commercial special planning district.

4.3 Cumulative Impact Analysis

4.3.1 Aesthetics

The 2020 LRDP Update would not result in impacts related to scenic vistas or scenic highways. Therefore, it would not contribute to cumulative impacts related to these issues. Impacts regarding implementation of the 2020 LRDP Update would result in less-than-significant impacts related to visual quality and character. The 2020 LRDP Update includes principles and policies that would result in minimal changes to the campus' visual quality and character, including restricting building heights and using landscaped setbacks. Implementation of Mitigation Measure LRDP-AES-1 would ensure that the landscaping requirements are implemented in a timely manner. These impacts would be confined to the campus and its immediate surroundings. Therefore, the 2020 LRDP Update would **not contribute to a cumulative impact** to visual quality or character.

The Sacramento Campus and vicinity is an urbanized area with numerous existing sources of glare and nighttime lighting. Existing development in the city of Sacramento and surrounding Sacramento County has resulted in a cumulative increase in nighttime lighting. The cumulative effect of this past development has resulted in a cumulative loss of available nighttime views.

Future development on the campus would occur within existing urban uses, which would already be subject to lighting from existing development. With implementation of Mitigation Measures LRDP-AES-2b through LRDP-AES-2d, the campus' contribution to cumulative increases of nighttime lighting under the 2020 LRDP Update would be further minimized, and the 2020 LRDP Update's contribution would not be cumulatively considerable. Therefore, cumulative light impacts from implementation of the 2020 LRDP Update would be **less than significant with mitigation**.

One of the main sources of existing glare is multi-story buildings with glass-dominated façades in downtown Sacramento or along major roadways. Development under the 2020 LRDP Update would intensify development in the downtown area. However, with implementation of the Sacramento Campus's design review process and implementation of Mitigation Measure LRDP-AES-2a, the project would not result in a cumulatively considerable contribution to significant daytime glare impacts in the Sacramento area.

4.3.2 Air Quality

The cumulative context for air quality is both regional (i.e., Sacramento Valley Air Basin [SVAB]) and local (i.e., within 1,000 feet of the plan area). The proposed land uses under the 2020 LRDP Update would result in an increase of emissions from stationary sources (e.g., equipment at the Central Energy Plant), area sources (e.g., landscaping equipment), energy sources (e.g., purchased natural gas), and fugitive (e.g., laboratories) sources. Proposed uses under the 2020 LRDP Update would also result in increased traffic and related mobile source emissions throughout the region because of increased capacity for students, patients, visitors, and staff. Cumulative development in the region will continue to increase the concentration of pollutants from traffic, natural gas combustion in buildings, area sources, and stationary sources, but would be partially offset by State and federal policies that set emissions standards for mobile and non-mobile sources.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) has developed significance thresholds for ozone precursors—reactive organic gases (ROG) and nitrogen oxides (NO_x)—and particulate matter (PM₁₀ and PM_{2.5}). SMAQMD thresholds consider whether a project's

emissions would result in a cumulatively considerable adverse contribution to existing air quality conditions, which do not currently attain the federal ozone, PM_{2.5} or PM₁₀ standards. If a project's emissions would be less than these levels, the project would not be expected to result in a cumulatively considerable contribution to the significant cumulative impact (Sacramento Metropolitan Air Quality Management District 2020). SMAQMD has likewise established incremental cancer and hazard thresholds to evaluate receptor exposure to toxic air contaminants (TACs). These health risk thresholds "should be used to determine whether a project's TAC emissions are cumulatively considerable" (Sacramento Metropolitan Air Quality Management District 2019). Program and project level impact analysis is inherently cumulative, as seen in the thresholds considered for air quality impacts, especially the threshold for Impact LRDP-AQ-2: *Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard.*

Short-Term Construction

Construction of projects implementing the 2020 LRDP Update would result in an exceedance of SMAQMD's NO_x and PM₁₀ thresholds. Implementation of Mitigation Measures LRDP-AQ-2a through LRDP-AQ-2e would reduce NO_x and PM₁₀ emissions to below SMAQMD's threshold of significances. Accordingly, emissions generated by construction of projects implementing the 2020 LRDP Update would not be cumulatively considerable, and therefore would result in a **less-than-significant** cumulative air quality impact.

Because construction emissions would not exceed SMAQMD's thresholds, they are not expected to contribute a significant level of air pollution that could degrade regional air quality within the SVAB. Likewise, the project would comply with SMAQMD's rules related to asbestos and would not expose receptors to localized particulate matter concentrations with implementation of Mitigation Measures LRDP-AQ-2a and LRDP-AQ-2b. While construction would not expose receptors to substantial criteria pollutant or asbestos concentrations, diesel particulate matter (DPM) generated by diesel fueled equipment and vehicles would contribute to health risks in excess of SMAQMD's threshold. Mitigation Measure LRDP-AQ-3a would reduce the severity of this impact, but not to a less-than-significant level. Accordingly, construction of projects implementing the 2020 LRDP Update would result in a **significant-and-unavoidable** cumulative impact from exposure of receptors to substantial concentrations of DPM.

Using diesel-fueled equipment, applying architectural coatings, and asphalt paving during construction could generate minor odors. However, these odors would be short-term, spread throughout the 146-acre campus, and would not be pervasive. Therefore, construction generated odors would not be cumulatively considerable and would result in a **less-than-significant** cumulative impact.

Long-Term Operation

The net increase in operational emissions resulting from implementation of the 2020 LRDP Update would exceed SMAQMD's daily and annual PM₁₀ thresholds. UC Davis' Sustainable Practices Policy will reduce the severity of these exceedances through improvements in energy efficiency and increased penetration of electric vehicles in the campus vehicle fleet (University of California 2019). However, these policies were not quantified because of constraints associated with the forecast method, or because the exact number of affected structures is currently unknown. Operational emissions from implementation of the 2020 LRDP Update will therefore likely be lower

than those quantified in this analysis; nonetheless, they remain above SMAQMD's thresholds. Implementation of Mitigation Measures LRDP-AQ-2e and LRDP-TRA-1a would also reduce the 2020 LRDP Update's operational impacts, but not to a less-than-significant level. Accordingly, the 2020 LRDP Update's long-term operational emissions would be cumulatively considerable. No additional mitigation beyond that suggested in Section 3.2, *Air Quality* is available to reduce the 2020 LRDP Update's contribution. The 2010 LRDP Final EIR concluded that cumulative operational emissions generated as a result of implementation of the 2010 LRDP would be less than significant. Operational emissions generated by the 2020 LRDP Update would result in a **significant-and-unavoidable** cumulative air quality impact.

Operational criteria pollutant emissions resulting from implementation of the 2020 LRDP Update would exceed SMAQMD thresholds, even with implementation of Mitigation Measure LRDP-AQ-2e. As such, levels of criteria pollutants associated with the 2020 LRDP Update under implementation could contribute a significant level of air pollution that could degrade regional air quality in the SVAB. Mitigation Measure LRDP-AQ-3b requires all generators utilize renewable diesel and outlines additional best available control technology for generators at the Central Energy Plant to reduce DPM emissions and associated health risks. Renewable diesel would reduce PM10 emissions and the corresponding risk contribution from emergency generators by 30 percent (Durbin et al. 2010). Replacing existing Tier 0 generators with engines meeting EPA Tier 4 Final or better emission standards would reduce PM10 emissions (and thus risk) by approximately 89 percent (Trinity Consultants 2017). Likewise, retrofitting existing Tier 0 generators with diesel particulate filters would reduce emissions and risks by 85 percent (California Air Resources Board 2015). Increasing the generator stack height would reduce the maximum predicted cancer risk by 39 percent. Any of these three options, combined with use of renewable diesel, would reduce operational health risks from implementation of the 2020 LRDP Update to **less than significant with mitigation**.

Operational uses under the 2020 LRDP Update would result in different levels of odor emissions ranging from odors associated with motor vehicle operation to food preparation to academic research. These types of sources are not different from those that are currently generated by the campus or surrounding land uses. Academic research using odorous materials would take place inside buildings with appropriate laboratory hoods and ventilation equipment as required by regulations. Accordingly, operational odors associated with the 2020 LRDP Update would not be cumulatively considerable and would result in a **less-than-significant** cumulative impact.

4.3.3 Biological Resources

Implementation of the 2020 LRDP Update would not contribute to a significant cumulative impact on special-status species or their habitat or loss of heritage trees in the region.

As development in the City of Sacramento and in the greater Sacramento Valley continues, sensitive plant and wildlife species native to the region and their habitat would be lost through conversion of existing open space to urban development. These losses would include species listed under the federal Endangered Species Act or the California Endangered Species Act, and would include individuals identified by state and federal resources agencies as Species of Concern, Fully Protected, or Sensitive. Although more mobile species might be able to survive these changes in their environment by moving to new areas, less mobile species could be locally extirpated. With continued conversion of natural habitat to human use, the availability and accessibility of remaining foraging and natural habitats would dwindle and those remaining natural areas may not be able to support additional plant or animal populations above their current carrying capacities. The

conversion of plant and wildlife habitat on a regional level could result in a significant impact on special-status species and their habitats. However, development on the campus under the 2020 LRDP Update would not make a cumulatively considerable contribution to the cumulative impact on special-status species and their habitats, as special-status species are not known to occur on the campus, and the campus is located in a heavily developed urban area that does not provide suitable habitat for most special-status species in the area. Any potential project-level impacts would be reduced by implementation of Mitigation Measures LRDP-BIO-2, LRDP-BIO-3, and LRDP-BIO-4. Therefore, development under the 2020 LRDP Update would not significantly contribute to the cumulative loss of special-status species in the region and this impact would be **less than significant**.

Regional development in the greater Sacramento area would result in the removal of native trees. Although many cities and counties in the greater Sacramento Valley have programs in place to avoid and minimize the removal of mature, native trees, and especially those that meet the definition of heritage trees, some removal is inevitable. The loss of heritage trees due to cumulative development is considered a significant impact. Project-level impacts would be reduced by implementation of Mitigation Measure LRDP-BIO-3a to avoid heritage tree removal and Mitigation Measure LRDP-BIO-3b to plant replacement trees if avoidance is not possible, though the campus is not subject to the City's tree preservation ordinance. Campus growth under the proposed 2020 LRDP Update would require the removal of several heritage trees. Although the impact would be long term due to the time required for replacement trees to reach heritage size, ultimately the impact would be mitigated. Therefore, though a cumulative impact related to the loss of heritage trees exists, the contribution of development under the 2020 LRDP Update would not be cumulatively considerable and this impact would be **less than significant**.

4.3.4 Archaeological, Historical, and Tribal Cultural Resources

Any disturbance of native soils carries the potential to result in impacts on archaeological resources. Campus development under the 2020 LRDP Update and other development in Sacramento County over time could result in some impacts on built environment historical resources and unique archaeological resources. These impacts may be significant if a significant resource is disturbed or destroyed. If archaeological or historical resources are encountered, the campus will carry out a program of archaeological investigation as stipulated under Mitigation Measures LRDP-CUL-1a through LRDP-CUL-3b, which will, in most cases, enable the University to avoid or preserve unique archaeological resources and historical resources, and will appropriately recover data from and document resources that cannot be preserved in place. Other projects would similarly seek to avoid impacts on archaeological and historical resources. However, some unique archaeological or historical resources in Sacramento County could be damaged or destroyed over time, particularly in areas with greater potential for such resources to be located. Additionally, some historic buildings may be demolished or altered, and mitigation to reduce this impact to a less-than-significant level is not available. Therefore, a cumulative impact does exist.

Based on the nature and types of structures on campus that would be altered or removed under the 2020 LRDP Update, and based on the highly disturbed nature of the campus site, it is unlikely unique archaeological or significant historical resources (other than the Governor's Hall) would be altered or removed. However, if this unlikely event should occur, documentation of these resources via a Historic American Buildings Survey or a Historic American Engineering Record may not be adequate mitigation. As a result, analysis for this Supplemental EIR conservatively concludes that the impact

on historic resources could be significant and unavoidable. However unlikely, potential removal of one or more significant historic resources could result in a cumulatively considerable contribution to this cumulative regional impact on historic resources. Therefore, the contribution from implementation of the 2020 LRDP Update to this cumulative impact is considered **significant and unavoidable**.

4.3.5 Energy

The geographic area considered for cumulative impacts related to energy use includes the Pacific Gas and Electric Company (PG&E) service area for natural gas, and the campus' Central Energy Plant for electricity. PG&E provides the physical infrastructure in the region for electricity and natural gas. The cumulative context for energy usage considers Sacramento County. The project, in combination with other development in Sacramento County, would contribute to the increased demand of natural gas. PG&E anticipates having adequate energy capacity through the year 2050.

Implementation of the 2020 LRDP Update would reduce energy demand through exceedance of Title 24 CCR standards for energy efficiency in effect at time of construction. Design features specified in the 2020 LRDP Update would further improve the project's energy efficiency and reduce nonrenewable energy demand through increased use of onsite renewable energy, efficient lighting, energy efficient plumbing fixtures, and/or consideration of zero net energy development (if feasible). Implementing the combination of these features would improve project energy efficiency and reduce its contribution to the cumulative demand for energy from buildings. The 2020 LRDP Update's transportation system design would reduce its contribution to cumulative transportation energy use through the expansion of new on-street and off-street bicycle facilities. This would also reduce project vehicle miles traveled (VMT) and associated fuel usage relative to similar land uses. Therefore, the project's contribution to cumulative energy demand impacts would not be cumulatively considerable, and cumulative impacts would be **less than significant**. No mitigation measures are necessary to reduce the 2020 LRDP Update's contribution to cumulative impacts to energy.

4.3.6 Geology, Soils, and Seismicity

Geotechnical impacts are site-specific rather than regional in nature, and any development occurring on the UC Davis Sacramento Campus would be subject to, at minimum, uniform site development and construction and regulatory standards relative to seismic and other geologic conditions that are prevalent in the region, such as California Building Code standards. Other development in the region would also be site specific and subject to the same regulations. As such, there is no cumulative impact related to geology, soils, and seismicity to which the implementation of the 2020 LRDP Update could contribute.

4.3.7 Greenhouse Gas Emissions

With implementation of the University Carbon Neutrality Initiative pursuant to the UC Sustainable Practices Policy (University of California 2019), implementation of the 2020 LRDP Update would reduce GHG emissions below existing conditions, and therefore would not contribute a significant amount of GHG emissions or contribute to existing cumulative emissions. However, per capita mobile source emissions would exceed SACOG's 2020 *Metropolitan Transportation Plan/Sustainable Communities Strategy* (2020 MTP/SCS) (Sacramento Area Council of Governments 2019) GHG

reduction target. Total emissions resulting from the 2020 LRDP Update would also exceed project-specific emissions thresholds derived from the state's long-term climate change goals under SB 32 and EO B-55-18. Implementation of the UC Sustainable Practices Policy (University of California 2019), Mitigation Measures LRDP-AQ-2e, LRDP-TRA 3a, and LRDP-GHG-2 would reduce emissions consistent with the state's climate change reduction trajectory, as articulated under statewide regulations and legislation (e.g., SB 32, EO B-55-18).

These mitigation measures would reduce the contribution of the 2020 LRDP to the cumulative impact to meet statewide planning goals and therefore the contribution would be less than cumulatively considerable. Therefore, this impact is **less than significant with mitigation**.

4.3.8 Hazards and Hazardous Materials

Although some hazardous material releases can cover a large area and interact with other releases (e.g., atmospheric contamination, contamination of groundwater aquifers), incidents of hazardous materials contamination are more typically isolated to small areas such as leaking underground storage tank sites or releases at individual businesses. These relatively isolated areas of contamination typically do not interact in a cumulative manner with other sites of hazardous materials contamination. However, if construction would create a new site of contamination or contribute substantially to a hazardous condition in the general plan area, it could be considered to contribute to a cumulative impact. Impacts related to emergency vehicle access and response are considered site specific and could not contribute to a cumulative impact. This impact is **less than significant**.

As noted previously, there are three potential hazardous materials sites that have been remediated and investigated and no longer pose a threat to human health. Further, implementation of Mitigation Measure LRDP-HAZ-2 to prepare a Phase I Environmental Site Assessment would ensure this program-level impact was less than significant. It is possible, though unlikely, that other projects in the vicinity may be under construction at the same time and may result in the disturbance of hazardous materials sites or accidental release of hazardous materials during construction and exposure of the public to hazardous materials. Therefore, there is the potential for a cumulative impact to exist. With implementation of Mitigation Measures LRDP-HAZ-2, the contribution of the 2020 LRDP Update to this cumulative impact would not be considerable.

4.3.9 Hydrology and Water Quality

The cumulative context for evaluation of hydrology and water quality impacts includes development proposed under the 2020 LRDP Update in combination with anticipated development in the City of Sacramento that has the potential to impact the watershed or the underlying groundwater aquifers. The geographic context for consideration of cumulative hydrology and water quality impacts is the Sacramento River Basin for surface waters and the Sacramento Valley Groundwater Basin for groundwater.

Runoff and Water Quality

By implementing stormwater best management practices (BMPs) and complying with applicable water quality requirements, construction and operational activities associated with the 2020 LRDP Update would not contribute substantial pollutant loads in stormwater runoff that could degrade receiving water quality. Future development would increase the amount of impervious surfaces,

resulting in increased runoff rates and degradation of surface and groundwater quality in the basin. However, past, present, and future development would comply with applicable regulatory water quality requirements and permits, such as the National Pollutant Discharge Elimination System (NPDES) Construction General Permit and the Municipal Separate Storm Sewer System (MS4) permit. Implementation of post-construction measures as required by the City's Stormwater Quality Improvement Program (SQIP) would reduce or eliminate water quality issues, include source control measures, and treat polluted runoff using techniques such as detention or retention basins. Even with these requirements, there is a potential for a cumulative impact on water quality resulting from increases in impervious surfaces and contributions to pollutant loads in stormwater runoff.

Construction of 2020 LRDP Update projects would be conducted in accordance with applicable regulatory water quality requirements and permits. Short-term water quality impacts associated with soil erosion and subsequent sediment transport, as well as release of litter, oil, and other pollutants that could contaminate water runoff may occur from 2020 LRDP Update project sites and contribute to a cumulative impact. However, the project's contribution to any cumulative effect on water quality would be temporary and would not be cumulatively considerable, and this impact would be **less than significant**.

Stormwater Drainage and Flooding

Implementation of the 2020 LRDP Update would not result in substantial alterations to drainage patterns, would not increase stormwater runoff that would result in flooding, and would not exceed stormwater drainage system capacity.

Stormwater from the western half of the campus and excess flows from the eastern half of the campus are detained in the onsite stormwater detention basin before discharge into the City's combined sewer system for treatment at the City's Combined Wastewater Treatment Plant (CWTP). The combined sewer system is considered at or near capacity and requires all additional inflow to be offset. The CWTP may discharge untreated combined wastewater under extreme high flow conditions, which could contribute to flooding and potential violation of water quality discharge requirements. However, the City requires post-construction stormwater and sanitary sewer flow rates be less than or equal to pre-construction stormwater and sanitary sewer flow rates for discharges from the combined system (City of Sacramento 2009). Further, all new development is required to handle stormwater, which ensures that flooding will not increase or be redirected to other areas. The City's *2035 General Plan* requires all new development to provide a no-net increase in stormwater runoff peak flows over existing conditions associated with a 100-year storm event (City of Sacramento 2015). Therefore, there would be no cumulative impact on stormwater drainage system capacity.

The incremental hydrology (i.e., stormwater drainage and runoff) impact contribution from implementation of the 2020 LRDP Update would be minor, as the overall increase in impervious surfaces and the changes to drainage patterns would be minor. When the effects of the project on hydrology are considered in combination with other cumulative projects, the combined effects on hydrology could result in a cumulatively significant impact. New projects are subject to the requirements of the Municipal MS4 Permit, the NPDES Construction General Permit, and City general plan policies and municipal codes as they relate to protecting water resources. Even with compliance with these requirements, there is a potential for a cumulative impact on stormwater drainage and flooding resulting from increases in impervious surfaces and associated increased runoff volumes. However, with implementation of post-construction stormwater management

BMPs, and because implementation of the 2020 LRDP would address impacts from new impervious surfaces and result in minimal changes to drainage patterns, the project's contribution to any cumulative impacts on hydrology would not be cumulatively considerable. Cumulative impacts as a result of the 2020 LRDP Update would be **less than significant**.

Water Supply and Groundwater Recharge

Implementation of the 2020 LRDP Update would not increase groundwater demands or substantially change or interfere with groundwater recharge. Therefore, there would be **no impact** and implementation of the 2020 LRDP Update would not contribute to any changes in aquifer volume or groundwater table.

4.3.10 Land Use and Planning

The cumulative context for land use impacts includes existing and planned land uses surrounding the UC Davis Sacramento Campus. UC Davis is the only agency with land use jurisdiction over Sacramento Campus projects; therefore, campus development that is consistent with the proposed 2020 LRDP Update would have no land use impacts on campus. It is anticipated that development of future non-University off-campus projects near the project site would be reviewed for consistency with land use plans and policies specified in the current *Sacramento 2035 General Plan* (City of Sacramento 2015). Likewise, the Sacramento Campus would evaluate projects for consistency with the 2020 LRDP Update and consider consistency with nearby land uses. Therefore, it is reasonable to assume that future development would be consistent with plans or policies adopted for the purpose of avoiding or mitigating an environmental effect, and the cumulative land use impact would be **less than significant** and not cumulatively considerable.

4.3.11 Noise

The geographic scope of analysis for cumulative noise and vibration construction impacts, as well as stationary noise sources, encompasses cumulative projects within approximately 1,000 feet of the project site. Beyond 1,000 feet, the contributions of noise from other projects would be greatly attenuated through both distance and intervening structures, and their contribution would be expected to be minimal. The analysis considers vehicular traffic noise from cumulative growth as well as cumulative construction noise and vibration from other potential projects in the project area.

Short-Term Construction Noise

Construction noise is a localized impact that reduces as distance from the noise source increases. Therefore, projects would need to be located in relatively close proximity to one another for noise levels to combine and to expose the same receptors to greater noise than they would be exposed to from one project alone. In addition, intervening features (e.g., buildings) between construction areas and nearby noise-sensitive land uses result in additional noise attenuation by providing barriers that break the line of sight between noise-generating equipment and sensitive receptors, further reducing the likelihood for noise from multiple construction projects to expose an individual receptor to greater noise levels.

Most construction for future projects under the 2020 LRDP Update would occur during daytime hours when no numerical City of Sacramento noise thresholds would apply. However, some construction activities may occur outside of these exempt daytime hours when more stringent

exterior noise thresholds would apply. The project-specific analysis determined that construction of projects under the 2020 LRDP Update could in result significant construction noise impacts during non-exempt hours. Implementation of Mitigation Measure LRDP-NOI-1 would reduce construction exposure to noise-sensitive land uses and would therefore reduce the severity of construction noise impacts. However, it is not possible to ensure that noise from construction would be reduced to less than significant levels for all future projects and in all locations.

For these reasons, it is possible that construction noise from development under the 2020 LRDP Update could combine with construction noise from nearby cumulative projects to expose individual receptors to greater noise levels than would occur from the project alone. Cumulative construction noise impacts are considered **significant and unavoidable**. Since it may not be possible to reduce construction noise impacts from development under the 2020 LRDP Update to less than significant levels, the project contribution to this cumulative impact would be cumulatively considerable.

Short-Term Construction Vibration

With regard to potential building damage, the potential for vibration-related damage to occur is assessed based on PPV. Because PPV is a measure of the instantaneous vibration level (rather than an average such as the vibration velocity level), worst-case ground-borne vibration levels from construction are generally determined by whichever individual piece of equipment generates the highest vibration levels at the affected building(s). Vibration from multiple construction sites, even if they are located close to one another, would not be expected to combine to raise the maximum PPV. For this reason, there would be no combined impact from multiple construction projects beyond the levels that would be assessed as direct impacts from each site. Accordingly, cumulative vibration-related damage impacts would be **less than significant**.

With regard to potential annoyance-related vibration effects implementation of the 2020 LRDP Updated was determined to result in potentially significant vibration-related annoyance effects to on- and off-campus uses. However, with implementation of Mitigation Measures LRDP-NOI-3a and LRDP-NOI-3b, annoyance-related vibration impacts would be reduced to less than significant levels. In addition, vibration-related annoyance effects are also highly localized (e.g., limited to within a few hundred feet). Cumulative projects are not expected to be located close enough to construction for 2020 LRDP Update projects to result in cumulative vibration effects. Cumulative vibration-related annoyance impacts would be **less than significant**.

Long-Term Operation

Vehicular Traffic Noise

To determine the potential cumulative noise impacts in the campus area, vehicular traffic volumes from the Baseline 2019 scenario were compared to the 2040 With-Project scenario. For vehicular traffic noise impacts, in places where the existing and resulting (under 2040 With-Project conditions) noise levels do not exceed the “Normally Acceptable” land use compatibility standard, an increase of more than 5 dB from Baseline to Year 2040 With-Project conditions is considered a significant cumulative traffic noise increase. In places where the existing or resulting noise levels do exceed the “Normally Acceptable” level based on the land use compatibility chart, a 3 dB or larger increase is considered a significant cumulative traffic noise increase.

As shown in Table 4-3, cumulative increases from Baseline 2019 to Year 2040 With-Project conditions would be less than 3 dB for all analyzed segments. Therefore, there would be no cumulative traffic noise impacts. Since there are no cumulative traffic noise impacts, the project contribution to a cumulative traffic noise impact need not be assessed. Nevertheless, traffic noise modeling for Year 2040 with- and without-project conditions demonstrated that the project would result in relatively minor noise increases (no more than 0.7 dB) or would result in decreases (up to -0.7 dB) along all analyzed segments. Cumulative traffic noise impacts would be **less than significant**.

Table 4-3. LRDP-Related Traffic Noise Increases

Segment		Baseline (2019) Noise	Year 2040 Without Project (dB L _{dn})	Year 2040 With Project (dB L _{dn})	Delta Baseline and 2040 LRDP ^a	Cumulative Impact? ^a	Project- Related Increase ^b	Cumulatively Considerable Increase?
Stockton Boulevard	T Street to 39th Street/Miller Way	69.3	70.9	71.1	1.8	No	0.2	NA
Stockton Boulevard	39th Street/Miller Way to X Street	69.6	71.3	71.5	1.9	No	0.2	NA
Stockton Boulevard	X Street to 2nd Avenue	68.4	69.6	70.0	1.6	No	0.4	NA
Stockton Boulevard	2nd Avenue to 3rd Avenue	68.9	69.9	70.4	1.5	No	0.5	NA
Stockton Boulevard	3rd Avenue to Broadway	68.9	70.1	70.8	1.9	No	0.7	NA
Stockton Boulevard	South of Broadway	69.7	70.4	70.5	0.8	No	0.1	NA
Broadway	West of Stockton Boulevard	68.6	70.0	70.2	1.6	No	0.2	NA
Broadway	Stockton Boulevard to 49th Street	67.1	68.3	68.0	1.0	No	-0.3	NA
Broadway	49th Street to 50th Street	65.9	66.4	66.7	0.8	No	0.3	NA
Broadway	50th Street to 59th Street	66.8	68.6	68.4	1.7	No	-0.1	NA
Broadway	East of 59th Street	66.4	68.1	68.0	1.6	No	-0.1	NA
V Street	West of 49th Street	58.3	59.6	59.3	1.0	No	-0.3	NA
V Street	East of 49th Street	59.7	61.6	61.8	2.1	No	0.2	NA
50th Street	North of Broadway	62.3	65.7	65.1	2.8	No	-0.6	NA
2nd Avenue	West of Stockton Boulevard	61.3	62.7	62.7	1.3	No	0.0	NA
2nd Avenue	East of Stockton Boulevard	63.0	66.4	65.6	2.6	No	-0.7	NA

^a To determine the potential cumulative noise impacts, Baseline 2019 volumes were compared to the 2040 With-Project volumes. In places where the existing and resulting noise levels are below the “Normally Acceptable” land use compatibility standard, an increase of more than 5 dB from Baseline to Year 2040 With-Project conditions is considered a significant cumulative traffic noise increase. In places where the existing or resulting noise levels do exceed the “Normally Acceptable” level based on the land use compatibility chart, a 3 dB or larger increase is considered a significant cumulative traffic noise increase.

^b As no cumulative impacts were identified, the project contribution to a cumulative traffic noise impact need not be assessed. However, traffic noise modeling results for Year 2040 with- and without-project conditions are included for informational purposes. The results demonstrate that the project would result in relatively minor noise increases (no more than 0.7 dB) or decreases (up to -0.7 dB) in noise along all analyzed segments.

Siting of Noise-Generating Uses

Operational noise sources resulting from the implementation of the 2020 LRDP Update would include mechanical equipment at the Central Energy Plant, heating and cooling equipment at some individual future buildings, emergency generator testing (at the Central Energy Plant, and elsewhere), operational loading activities, events at the campus (which can include amplified music or speech), and emergency helicopter operations. Direct impacts from the addition of a new 2,000-ton chiller to the Central Energy Plant were determined to be less than significant. Due to the location of this equipment on the campus and internal to the plant structure, this noise source would not be expected to combine with operational noise sources from other nearby projects to result in a cumulative noise impact. Similarly, noise from loading activity was analyzed and was determined to result in less than significant noise increases. Loading is a common occurrence in urban environments, and intermittent noise increases resulting from loading would not be expected to combine with loading noise from other nearby cumulative projects to expose the same receptors to increased combined loading noise.

Noise from amplified music and speech at Aggie Square events was also analyzed, and was determined to result in less than significant impacts in part due to compliance with time restrictions outlined in the City code. Given that cumulative projects in the campus vicinity would not be expected to include events with amplified music or speech, amplified noise from these events would not be expected to combine with amplified noise at nearby cumulative projects to expose the same receptors to greater noise levels than would occur from an event at Aggie Square alone.

Most operational sources of noise do not typically generate noise that is perceptible far beyond the edge of a project site. Although noise from mechanical equipment for future projects under the 2020 LRDP Update would be localized and would attenuate rapidly with distance, it is possible that equipment could generate noise in excess of allowable levels depending on the type of equipment installed and the location of the equipment. Direct impacts of mechanical equipment noise under the 2020 LRDP Update were analyzed and determined to result in potentially significant impacts.

It is also possible noise-generating uses from nearby projects (especially already approved on-campus projects) could be close enough to one another that mechanical noise from multiple projects could combine and result in a cumulative noise impact. Therefore, it is possible that noise from multiple projects could combine to cause a cumulative noise impact at nearby sensitive uses. This cumulative impact is considered potentially significant. Implementation of Mitigation Measure LRDP-NOI-2a would ensure equipment installed for projects under the 2020 LRDP Update would comply with the noise thresholds described in this Supplemental EIR, and that noise levels would not exceed 50 dBA L_{eq} at nearby sensitive residential land uses. With this mitigation in place, the contribution of the implementation of the 2020 LRDP Update to a cumulative impact on operational noise (excluding the Central Energy Plant) would not be considerable. This impact is considered **less than significant with mitigation**.

With regard to emergency generator testing noise, testing noise under the 2020 LRDP Update would be temporary and intermittent, occurring for a period of 30 minutes at a time approximately one time per month. Project-related noise impacts from testing would likely exceed the quantitative criteria from the Sacramento City Code. Implementation of Mitigation Measure LRDP-NOI-2a, which would require that emergency generators installed as a result of implementation of the 2020 LRDP Update are oriented, located, and designed in such a way to reduces noise exposure during testing to below the applicable City of Sacramento criteria, would

reduce project-related impacts from generator testing to less than significant levels. Although direct project impacts were conservatively considered to be significant before mitigation, it is unlikely that other nearby projects would involve emergency generator testing that would occur concurrently and in close proximity to emergency generator testing for generators installed under the 2020 LRDP Update. Because testing of emergency generators would not be expected to occur concurrently and in close proximity to other generators, cumulative impacts related to emergency generator testing would be considered **less than significant**.

Emergency helicopter operations would increase as a result of the project, and this increase would result in more individual homes being located within the 65 community noise equivalent level (CNEL) contour for helicopter noise and in one additional helicopter landing and takeoff cycle per day, and an additional occurrence of potential sleep disturbance per night. However, cumulative projects in the vicinity of the campus would not be expected to increase emergency helicopter operations. Therefore, cumulative impacts related to emergency helicopter operations would be **less than significant**.

4.3.12 Population and Housing

The Sacramento Area Council of Governments (SACOG) predicts that the six-county regional population will be approximately 3 million people by 2040, which is an increase of approximately 620,000 people from 2016 to 2040. The 2020 LRDP Update would increase the Sacramento Campus daily population from 13,547 to approximately 21,200 persons by 2040, which is an increase of 7,652 persons. The average daily patient-related population increase of 785 persons by 2040 would occur as an element of the region's population growth regardless of 2020 LRDP Update implementation.

With the implementation of initiatives and projects at the Sacramento Campus planned under the 2020 LRDP Update, the non-patient (i.e., employees and students) portion of the campus' daily population is expected to grow from 8,932 to 15,799 over the next 20 years, which is an increase of 6,867 persons. Some of this population would already be residing in the Sacramento metropolitan area when the new employees are hired at the campus or when a student first enrolls in school; however, if it were conservatively assumed that all of these individuals would be new to the six-county metropolitan area (i.e., would relocate into the metropolitan area upon hire or initial enrollment), this additional population of 6,867 persons would represent 2.6 percent of the growth in Sacramento County and 0.4 percent of the Sacramento County total population in 2040. It can be assumed that some of the non-patient portion of the population would be accompanied by dependents. The current average household size in Sacramento County is 2.89 persons, resulting in approximately 12,979 dependents. The total population added by the project (i.e., 19,846 persons) would represent 7.3 percent of the growth in Sacramento County and 1.1 percent of the county's total population in 2040. The total population added by the project would represent 3.1 percent of the growth in the six-county area and 0.6 percent of the area's total population in 2040.

UC Davis Sacramento Campus faculty, staff, and students, when distributed over these regional communities, would constitute a small portion of the population growth that is expected in the individual communities comprising the Sacramento region. Faculty members and students reside throughout the Sacramento metropolitan region, and it is assumed that new faculty and staff would as well. It is estimated that campus growth under the 2020 LRDP Update would add approximately 3,090 persons to the city of Sacramento and about 2,000 persons to the city of Davis. Ample housing resources are available in the Sacramento metropolitan area and some housing will be provided

onsite. Furthermore, growth in the metropolitan area is being guided by SACOG's Preferred Blueprint Scenario, which promotes compact mixed-use development as an alternative to low-density development, and promotes more transit choices to minimize environmental impacts from growth (https://www.sacog.org/sites/main/files/file-attachments/preferred_mapping_11x17_0.pdf?1519408520).

The 2020 LRDP Update would allow for a slightly greater increase in population than the 2010 LRDP, but this would still be a relatively small increase compared to both general regional population growth and population growth as identified in the 2010 LRDP.

Because population growth associated with the 2020 LRDP Update would represent a small fraction of both the region's projected growth and population growth in individual communities, and because housing would be available, the project's contribution to cumulative population growth impact would not be cumulatively considerable. This impact would be **less than significant**.

4.3.13 Public Services

Demand for all public services in the Sacramento region could increase as a result of implementation of the 2020 LRDP Update and other expected cumulative growth. The expected population growth of the UC Davis Sacramento Campus is a component of the overall growth expected for the Sacramento metropolitan region. In accordance with the SACOG Blueprint Plan for the region, future growth is expected to increasingly occur within developed areas to leverage the existing investments in public facilities and infrastructure (Sacramento Area Council of Governments 2004). The degree to which cities and counties implement land use change and approve development patterns in accordance with the Blueprint Plan would influence the need for and design details of new public services.

As growth occurs in the Sacramento region, the individual cities and counties will undertake facilities planning processes to identify the appropriate size, location, and timing for new facilities. For instance, in Sacramento, additional police and fire services facilities are planned to meet the needs of the growing population. At this time, the details of such facilities have not been developed. Additional planning is expected to occur in the period of 2 to 5 years prior to construction of the needed facilities. Other development projects in the region would be required to pay impact fees consistent with local jurisdiction requirements, including the City of Sacramento and Sacramento City Unified School District, to ensure the adequate provision of public services, including schools, in the future, thereby offsetting the contribution of each cumulative project. Therefore, cumulative impacts to public services would be **less than significant**.

4.3.14 Recreation

The 2020 LRDP Update's projects would allow for a slightly greater increase in population than the 2010 LRDP, but this would still be a relatively small increase compared to both regional population in general and population growth identified in the 2010 LRDP. The increase in population at the Sacramento Campus as a result 2020 LRDP Update implementation would not result in a substantial increase in demand for recreational facilities, would not exceed planned recreational facility capacity, and therefore would not contribute to a cumulative impact. Additionally, other new developments within the city are required to pay fees to mitigate increased park demands in accordance with the Quimby Act (California Government Code Section 66477), which offsets the cost of maintenance and construction of recreation facilities in response to population increases. Therefore, implementation of the 2020 LRDP Update would not result in a cumulatively

considerable contribution such that a significant cumulative recreation impact would occur. As a result, no mitigation measures are necessary to reduce the 2020 LRDP Update's contribution to potential cumulative impacts related to recreation. Cumulative impacts to recreation would be **less than significant**.

4.3.15 Transportation and Circulation

The cumulative transportation impacts consider the 2020 LRDP Update's incremental effects on travel conditions when viewed in connection with the effects of reasonably foreseeable future land use and transportation changes. The 2020 LRDP Update's contribution may be considerable if it worsens or results in a significant cumulative impact. Under cumulative conditions, the 2020 LRDP Update would cause an impact if both of the following criteria are met.

- An unacceptable condition would exist
- The 2020 LRDP Update would have a cumulatively considerable contribution to the unacceptable condition

As described in Impacts LRDP-TRA-1 through LRDP-TRA-5, most project-specific transportation impacts associated with the implementation of the 2020 LRDP Update would be less than significant, except transit impacts.

The findings related to transportation hazards (Impact LRDP-TRA-3) and emergency vehicle access (Impact LRDP-TRA-4) focus on the physical design of the on-campus roadway and transportation network reflected in the 2020 LRDP Update. Since these physical design characteristics would not change in a cumulative setting, the less-than-significant impact finding from the project-specific analysis would also apply in a cumulative setting. Similarly, the impact statement and associated mitigation for construction impacts (Impact LRDP-TRA-5) address the cumulative effect of multiple construction activities; therefore, the findings in Impact LRDP-TRA-5 would also apply to the cumulative setting. Therefore, the project's contribution to cumulative impacts related to hazards, emergency access, and construction would be **less than significant**.

It is anticipated that reasonably foreseeable future land use and transportation changes would result in background growth in bicycle, pedestrian, vehicle, and transit travel in the region, in accordance with the SACOG 2020 MTP/SCS (Sacramento Area Council of Governments 2019). With regard to bicycle and pedestrian travel, the project's effect on existing and planned facilities would not change in a cumulative setting; therefore, the findings from the project-specific impact analysis (Impact LRDP-TRA-1) would still apply. Impact LRDP-TRA-1 addresses near-term projects along Stockton Boulevard and Broadway that would address existing off-campus gaps in the bicycle network. Although the timing for these improvements is not clearly established, they would likely occur early in the planning horizon for the 2020 LRDP Update. Impacts on bicycle and pedestrian facilities would be **less than significant**.

Background vehicle travel conditions will likely change when reasonably foreseeable future land use and transportation changes are considered. Therefore, the remainder of this cumulative transportation impact analysis focuses on cumulative VMT impacts and cumulative transit impacts.

Cumulative VMT Impact

As described in Impact LRDP-TRA-2, the 2020 LRDP Update would have a less-than-significant impact on VMT since the Sacramento Campus is in a low-VMT generating area of the Sacramento region and the 2020 LRDP Update proposes development that is similar to existing characteristics of the study area (i.e., density, mix of uses, and transit accessibility). The project analysis relies on the rate that VMT is generated in the area (i.e., VMT per employee or VMT per capita), and not the absolute total amount of VMT generated by the campus. The air quality, GHG, and energy impacts associated with this absolute travel activity are addressed in those specific topic chapters.

As noted above, the project analysis evaluates VMT using the VMT generation rate expressed on a per employee or per capita basis, as calculated by SACOG, to conclude that the project is in an area that generates VMT at a lower per capita rate than the regional average. Per the Technical Advisory, these efficiency metrics “cannot be summed because they employ a denominator.” Furthermore, the Technical Advisory notes that a “project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less-than-significant cumulative impact.”

Furthermore, the 2016 VMT per capita and 2040 VMT per capita maps in the SACOG 2020 MTP/SCS (see Figure 3.15-1 and Figure 3.15-2, respectively) demonstrate that the Sacramento Campus is anticipated to remain in a low-VMT generating area by the 2040 horizon year of the MTP/SCS (Sacramento Area Council of Governments 2019). This indicates that the Sacramento Campus is anticipated to continue to generate VMT at a more efficient rate when compared to the Sacramento region in the future. Therefore, the 2020 LRDP Update would have a **less-than-significant** cumulative impact on VMT.

Cumulative Transit Impact

Implementation of the 2020 LRDP Update would increase demand for transit, as noted in Impact LRDP-TRA-1. Increases to transit travel times caused by the project as well as reasonably foreseeable land use growth would adversely affect the on-time performance and service quality of transit services under cumulative conditions. Therefore, this impact would be **significant**.

There are no immediate planned changes to transit service in the study area. Therefore, it is speculative to assume that transit service and/or facilities would be expanded to accommodate additional transit demand. Furthermore, background traffic growth under cumulative conditions would likely result in increased vehicle delay along transit corridors, potentially further exacerbating service reliability issues for SacRT bus services operating on roadways surrounding the Sacramento Campus.

An exceedance of established transit service standards would cause transit services to operate below acceptable service level, quality, and/or performance targets, which would be deleterious to the transit customer experience (i.e., unreliability, chronic overcrowding issues) and potentially deter existing and prospective riders from using transit.

Implementation of Mitigation Measures LRDP-TRA-1a, LRDP-TRA-1b, and LRDP-TRA-1c would reduce the significance of this impact. However, the service improvements that are necessary to improve transit performance identified in Mitigation Measure LRDP-TRA-1a would require

implementation by SacRT. Since UC Davis cannot guarantee that these service improvements would be implemented, this cumulative impact would remain **significant and unavoidable**.

4.3.16 Utilities and Service Systems

The cumulative context for water treatment/distribution, wastewater collection/treatment, and chilled water and steam infrastructure impacts is the UC Davis Sacramento Campus. The University owns and operates two onsite wells, which supply irrigation water to the Sacramento Campus grounds and can be used for emergency purposes. The cumulative context for water supply is the City of Sacramento service area for surface water. The cumulative context for solid waste is Sacramento County. The Sacramento Campus' Central Energy Plant provides electricity and natural gas to the campus, and is the cumulative context for these resources. For the Aggie Square Phase I project, outside providers would be used and the cumulative context is the service areas for these providers (e.g., SMUD and PG&E).

As discussed in Section 3.16, *Utilities and Service Systems*, water is provided by the City of Sacramento. The City's 2015 *Urban Water Management Plan* (UWMP) projected increases in overall water demand through 2040 due to increases in population but decreases in per capita water use as the result of the City's continued and expanded water conservation efforts (City of Sacramento 2016). Growth projections used in the City's UWMP were based on the City's land use designations and land use acreages. While expansion of the Sacramento Campus as proposed in the 2020 LRDP Update was not specifically identified in the 2015 UWMP, the City found that, with the continued and expanded water conservation efforts described in the UWMP, the City has sufficient water supplies to meet projected water demands during a normal water year with the use of both surface and groundwater entitlements (City of Sacramento 2016).

In addition, while implementing the 2020 LRDP Update, the Sacramento Campus would implement sustainability strategies consistent with the UC Policy on Sustainable Practices (University of California 2019) and the 2009–2010 *Climate Action Plan* (CAP) (University of California, Davis 2010). The CAP lists strategies to minimize campus water consumption, including water-efficient landscaping, fixture retrofits, efficient fixtures in new buildings, education, and energy conservation initiatives that would minimize water use. The 2020 LRDP Update would not result in a cumulatively considerable impact on water supply.

Under the 2020 LRDP Update, population increases would result in greater levels of wastewater flows. The development proposed in the 2020 LRDP Update would increase the volume of wastewater conveyed to the City of Sacramento combined sewer and storm water facilities, but there are planned upgrades to these facilities and they have sufficient capacity to serve the increased demand associated with the 2020 LRDP Update. The wastewater would be treated at the Sacramento Regional Wastewater Treatment Plant (SRWTP). The SRWTP 2020 Master Plan evaluates wastewater treatment needs based on planned growth, and includes plans for expansions to accommodate that growth. Because the implementation of the 2020 LRDP Update and other cumulative projects are included in the planning, there is no cumulative impact to which the project may contribute.

Overall campus demand for energy, including natural gas, has declined regardless of square footage and population growth as energy conservation and efficiency projects are implemented. This trend is anticipated to accelerate as the campus moves to further decrease energy use. However, maintenance and planned upgrades to the Central Energy Plant would be necessary to ensure health

and safety and other campus needs. Cumulative impacts related to construction of these improvements are evaluated in the relevant resources section (e.g., Section 3.3, *Biological Resources*, Section 3.4, *Archaeological, Historical, and Tribal Cultural Resources*, and Section 3.9, *Hydrology and Water Quality*) of this Supplemental EIR. The Aggie Square Phase I project is the only project on campus that would not use the Central Energy Plant, and environmental impacts associated with this project are described in Volume 2 of this Supplemental EIR. Because campus demand for energy and has declined, with inclusion of relevant mitigation measures, impacts would be reduced and incremental contributions of construction-related effects from infrastructure improvements would be less than cumulatively considerable. Thus, cumulative impacts would be **less than significant**, and no mitigation measures are necessary to reduce the 2020 LRDP Update's contribution.

As discussed in Section 3.17, *Utilities and Service Systems*, the quantity of municipal solid waste generated at the Sacramento Campus would increase through 2040 as the campus grows. However, the University of California has adopted the UC Policy on Sustainable Practices (University of California 2019), which sets waste diversion goals of 75 percent by June 2012 and zero waste by 2020 for UC campuses. The UC Policy on Sustainable Practices also encourages recycling of construction waste. Together these policies would minimize the amount of solid waste that would go to the Forward Landfill in Manteca, which has forecast adequate capacity until 2036. After 2036, alternative landfills will be required. The City of Sacramento has committed to achieving zero waste to landfills by 2040 (City of Sacramento 2035 General Plan, Policy U.5.1.1). The Sacramento Campus is also committed to reducing solid waste. With the reduced contributions from this project and cumulative projects, and the planned use of Foothill Landfill after 2036, there would be no cumulative impact.

Chapter 5

Other CEQA Considerations

Section 15126 of the California Environmental Quality Act (CEQA) Guidelines requires considering all project aspects when evaluating the project's impact on the environment, including planning, acquisition, development and operation. As part of analysis, this Supplemental EIR must also identify the following.

- Significant environmental impacts that cannot be avoided if the project is implemented.
- Significant irreversible changes that would result from implementation of the project
- Growth-inducing impacts of the project.

Although growth inducement itself is not considered an environmental effect, it could potentially lead to foreseeable physical environmental effects, which are discussed in Section 5.3, *Growth-Inducing Impacts*.

5.1 Significant Unavoidable Impacts

Section 15126.2(c) of the CEQA Guidelines requires that an EIR include a detailed statement setting forth, in a separate section, any significant effect on the environment that cannot be avoided if the project is implemented. Accordingly, this section summarizes the project's significant environmental impacts that cannot be mitigated to a less-than-significant level.

Chapter 3 of this volume (Volume 1), *Existing Environmental Setting, Impacts, and Mitigation*, describes the potential environmental impacts of the project, brings forward mitigation measures recommended in the 2010 LRDP Final EIR, as applicable, and recommends new mitigation measures to reduce impacts to the extent feasible. Chapter 4 of this volume, *Cumulative Impacts*, determines whether the incremental effects of the project are significant when viewed in connection with the effects of past projects, other current projects, and reasonably foreseeable future projects. With implementation of the recommended mitigation measures, most of the impacts associated with the 2020 LRDP Update are reduced to a less-than-significant level.

The following impacts are considered significant and unavoidable as no feasible mitigation is available or the feasible mitigation measures available were not sufficient to reduce the impact to a less-than-significant level. The impacts listed below are analyzed and discussed in their respective sections of Chapter 3 in each volume of this Supplemental EIR.

Implementation of the 2020 LRDP Update would result in the following significant and unavoidable environmental impacts following implementation of all feasible mitigation measures.

- Volume 1, 2020 LRDP Update
 - Impact LRDP-AQ-1: Conflict with or obstruction of implementation of the applicable air quality plan
 - Impact LRDP-AQ-2: Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard

- Impact LRDP-AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations
- Impact LRDP-CUL-1: Potential to cause a substantial adverse change in the significance of a historical resource
- Impact LRDP-NOI-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from construction activities in excess of applicable standards
- Impact LRDP-NOI-2: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from operations in excess of applicable standards
- Impact LRDP-NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels
- Impact LRDP-TRA-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities
- Volume 2, Aggie Square Phase I
 - Impact AS-AQ-1: Conflict with or obstruction of implementation of the applicable air quality plan
 - Impact AS-NOI-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from operations in excess of applicable standards
 - Impact AS-TRA-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities

5.2 Significant Irreversible Environmental Changes

Section 15126.2(d) of the CEQA Guidelines requires discussion of any significant irreversible environmental changes that would occur due to the project. Section 15126.2(d) states the following.

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible because a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Generally, a project would result in significant irreversible environmental changes if any of the following were to occur.

- The primary and secondary impacts would generally commit future generations to similar uses.
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project.

- The project would involve a large commitment of nonrenewable resources.
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

Implementation of the 2020 LRDP Update would result in the continued commitment of the UC Davis Sacramento Campus to health care, education, research, and other institutional uses that would irreversibly remove the plan area from other potential uses. UC Davis' ownership and existing use of the Sacramento Campus represents a long-term commitment to these institutional uses. Restoring the campus to pre-developed conditions is not feasible given the high level of existing capital investment on campus, urbanization of the area surrounding the campus, and disturbance to the natural setting.

Additional irreversible commitments to future include the project's proposed new campus housing, expanding existing medical and public health-related educational initiatives, and expanding health care facilities through the new hospital and ambulatory care facilities. Implementing the 2020 LRDP Update would result in irretrievable change to a small amount of remaining undeveloped land on campus.

Resources that would be permanently and continually consumed via project implementation include water, electricity, natural gas and fossil fuels. The quantity and rate of consumption of these resources would be reduced through continued and expanded implementation of the University's Sustainable Practices Policy (UC Davis 2019), and the energy efficiency and conservation programs identified in this Supplemental EIR. Accordingly, implementation of the 2020 LRDP Update would not result in significant environmental impacts related to the unnecessary, inefficient, or wasteful use of resources.

Notwithstanding the project benefits discussed in this Supplemental EIR, the project's construction and operational activities would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels such as diesel fuel, fuel oil, natural gas and gasoline for automobiles and construction equipment. However, during operation, the project would comply with or exceed the requirements of applicable building codes (including Title 24 of the California Code of Regulations). It would also do the following.

- Implement energy efficiency, conservation, and sustainability policies.
- Implement project-specific mitigation measures.
- Ensure natural resources are conserved or recycled to the maximum extent feasible.

Additionally, it is possible that new technologies or systems would emerge or become more cost effective, and would be incorporated into future new buildings on campus. This would further reduce the project's reliance on nonrenewable natural resources.

In summary, despite these efforts, consumption of natural resources would incrementally increase with implementation of the 2020 LRDP Update as the campus building square footage and daily population increase.

5.3 Growth-Inducing Impacts

Section 15126.2(e) of the CEQA Guidelines states that an EIR shall discuss the ways that the project could foster economic or population growth, or foster construction of additional housing, either directly or indirectly, in the surrounding environment. Analysis must include projects that would remove obstacles to population growth (for example, expanding a wastewater treatment plant). Increases in population may put pressure on existing public facilities that would require expanded or new public facilities that could cause significant environmental effects. According to the CEQA Guidelines, an EIR should also discuss the characteristics of a project that might encourage or facilitate other activities that could significantly affect the environment either individually or cumulatively. The CEQA Guidelines also state growth in any area should not be assumed beneficial, detrimental, or of little significance to the environment.

Generally, direct growth inducement would result if a project involved constructing new housing. Indirect growth inducement would result if implementing a project resulted in any of the following.

- Substantial new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises).
- Substantial short-term employment opportunities (e.g., construction employment) that indirectly stimulates the need for additional housing and services to support the new temporary employment demand.
- Removing an obstacle to additional growth and development, such as removing a constraint on a required public utility or service (e.g., constructing a trunk sewer line with excess capacity through an undeveloped area).

The CEQA Guidelines do not distinguish between planned and unplanned growth for purposes of considering whether a project would foster additional growth. Therefore, for purposes of this Supplemental EIR, to reach the conclusion that a project is growth-inducing as defined by CEQA, the Supplemental EIR must find that the project would foster (i.e., promote or encourage) growth in economic activity, population, or housing, regardless of whether the growth is already approved by and consistent with local plans. The conclusion does not determine that induced growth is beneficial or detrimental, consistent with CEQA.

Environmental effects resulting from induced growth are defined in CEQA Guidelines Section 15358(a)(2), in its definition of indirect effects. These indirect or secondary effects of growth may result in significant environmental impacts. The CEQA Guidelines do not require that an EIR speculate about the precise location and site-specific characteristics of significant, indirect effects caused by induced growth, but the CEQA Guidelines do require a good-faith effort to disclose what is feasible to assess. Potential secondary effects of growth could include consequences such as increased demand on community and public services and infrastructure, increased traffic and noise, degradation of air and water quality, or degradation or loss of plant and wildlife habitat that are the result of growth fostered by the project.

The following discussion analyzes potential growth-inducing impacts that might occur during implementation of the 2020 LRDP Update in the following areas.

- Population growth
- Construction of new housing

- Economic growth
- Removal of obstacles to growth by expanding public facilities or infrastructure capacity

Implementation of the 2020 LRDP Update would result in an increase in the on-campus student, staff, faculty and employee population growth of up to 21,200, or approximately 7,653 over baseline conditions. This is approximately 1,481 above what was analyzed in the 2010 LRDP Final EIR. In addition, the project proposes new housing by providing 324 new units in Aggie Square Phase I and 175 additional on-campus units by 2040. The environmental impacts of these plan area increments of growth are analyzed and addressed, both individually and cumulatively, in the relevant sections of this Supplemental EIR.

The project's increase in population growth would be partially offset by new on-campus student, faculty and staff housing, although the project will induce some off-campus growth. In relationship to growth occurring in the region, this impact is minimal, and well within regional growth plans. Impacts from induced off-campus growth have been addressed in the *Sacramento 2035 General Plan* (City of Sacramento 2015), the *Sacramento County General Plan 2030* (County of Sacramento 2011), and will be addressed in the City of Sacramento's *2040 General Plan Update* (in progress). Chapter 4 of this volume describes the cumulative impacts that are expected and foreseeable at this time. Therefore, while the 2020 LRDP Update could result in growth-inducing impacts off-campus beyond those inherent to the plan itself as analyzed here, those impacts are minor and adequately addressed throughout this Supplemental EIR, including, but not limited to, Sections 3.12, *Population and Housing*, 3.13, *Public Services*, and 3.14, *Recreation*.

Economic growth will be fostered by the 2020 LRDP Update's proposed expansion of health care, educational, and research initiatives. In addition, the Aggie Square Phase I component of the project would contribute to economic growth through job creation, workforce development, and by providing building space where public/private partnerships and community serving activities can occur.

The 2020 LRDP Update would be implemented within Sacramento Campus boundaries, which contain established uses, land uses, and supporting infrastructure. This Supplemental EIR and the 2010 LRDP Final EIR propose to mitigate the project's impact on existing utility, roadway, and infrastructure serving the campus. Development proposed by the plan would require modifying or replacing existing infrastructure on campus. In addition, the project would modify adjacent roadway connections and connections to adjacent public infrastructure. Project components proposed in the 2020 LRDP Update would occur in an urban setting that is already supplied with the necessary roadway and utility systems. No new systems or increased capacity, with the exception of roadway improvements necessary to address existing and future congestion issues, are proposed or required. Therefore, the 2020 LRDP Update would not remove of obstacles to growth in population through expanding public facilities or infrastructure capacity; the 2020 LRDP Update does not anticipate growth beyond what was already anticipated to occur, and does not anticipate growth beyond what is addressed in this Supplemental EIR.

6.1 Introduction

EIRs must consider alternatives to the proposed project that could substantially reduce or avoid significant environmental impacts. Section 15126.6(b) of the California Environmental Quality Act (CEQA) Guidelines states the following.

Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Pub. Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

Section 15126.6(a) of the CEQA Guidelines requires EIRs to describe the following.

... a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives that are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.

See also CEQA Guidelines section 15126.6[f].

The CEQA Guidelines require that an EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the project. If an alternative would cause one or more significant effects in addition to those that would be caused by the project, the significant effects of the alternative must be discussed, but in less detail than the significant effects of the project as proposed (CEQA Guidelines Section 15126.6[d]). The CEQA Guidelines further require consideration of a “no project” alternative (per CEQA Guidelines Section 15126.6[e]).

In defining “feasibility” (e.g., “... feasibly attain most of the basic objectives of the project ...”), CEQA Guidelines section 15126.6(f) (1) states, in part, the following.

Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

6.2 Project Overview

The 2020 LRDP Update involves minor modifications to the campus land use plan, which was originally established as part of the 2010 LRDP, to support potential growth, changes in land use, and changes in legislation related to vehicle miles traveled (VMT), air quality, and greenhouse gases.

The 2020 LRDP Update anticipates campus growth involving up to 7.07 million gross square feet (gsf) of building space and a population of up to 21,200, which includes patients, attendants, visitors, staff, faculty, and other academic personnel, students, interns, residents, and fellows. The building square footage and population totals represent increases from projections in the 2010 LRDP and the 2010 LRDP Final EIR.

6.2.1 Project Objectives

When determining what alternatives should be considered in an EIR, project objectives must be considered; attainment of most of a project's basic objectives forms one of the tests of whether an alternative is feasible (see discussion above). UC Davis identified the following project objectives as previously described in Chapter 2, *Project Description*.

- Provide additional state-of-the-art inpatient and outpatient capacity to keep pace with community health care needs and to support the UC Davis Health System's teaching, research, and community engagement missions.
- Facilitate growth in student enrollment and the implementation of major educational initiatives, such as the School of Public Health, to address the existing and projected need for health care professionals and other highly trained multidisciplinary professionals in the state of California.
- Support growth in workforce development and lifelong learning, including the Continuing and Professional Education program.
- Provide the facilities and infrastructure required to facilitate continued growth of the research enterprise at the Sacramento Campus, especially to foster interaction and collaboration between all campus programs and disciplines.
- Create an expansive and inclusive community of people focused on advancing health-contributing to the well-being of people in the communities we serve, propelling a more diverse and healthier economy, and expanding the positive impact of UC Davis Health through more expansive partnerships.
- Support access to jobs and services to a more diverse population, including providing housing and transportation opportunities and community-serving uses.
- Address the constraints to intellectual exchange and collaboration resulting from the dispersed offsite locations of some of the UC Davis Health System educational and research programs.
- Address seismic and other code-related deficiencies in aging buildings, replacing them with state-of-the-art facilities for health care and health care-related research.
- Implement sustainable site design and building design practices to support ongoing implementation of the UC Sustainable Practices Policy (University of California 2019).

In addition to the project objectives, the planning principles regarding physical development of the campus under the 2020 LRDP Update are listed below.

- Ensure appropriate facility adjacencies.
- Improve campus open space and landscape character.
- Provide convenient access to and throughout campus.
- Improve pedestrian connections throughout campus.
- Provide attractive campus entries and edges.
- Continue to plan and operate a sustainable campus.

6.3 Significant and Unavoidable Impacts

According to CEQA Guidelines Section 15126.6, an EIR must describe a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.

Implementation of the 2020 LRDP Update would result significant and unavoidable environmental impacts related to air quality, cultural resources, noise, and traffic. The following impacts have been identified as significant and unavoidable following implementation of all feasible mitigation measures.

- Impact LRDP-AQ-1: Conflict with or obstruction of implementation of the applicable air quality plan
- Impact LRDP-AQ-2: Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard
- Impact LRDP-AQ-3: Exposure of sensitive receptors to substantial pollutant concentrations
- Impact LRDP-CUL-1: Potential to cause a substantial adverse change in the significance of a historical resource
- Impact LRDP-NOI-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from construction activities in excess of applicable standards
- Impact LRDP-NOI-2: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project from operations in excess of applicable standards
- Impact LRDP-NOI-4: Placement of project-related activities in the vicinity of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the project area to excessive noise levels
- Impact LRDP-TRA-1: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities

6.4 Alternatives Considered but Dismissed

In addition to factors described previously, CEQA Guidelines state that an EIR should also identify any alternatives that were considered by the lead agency but were rejected during the planning or scoping process and briefly explain the reasons underlying the lead agency's determination. This section addresses alternatives considered but dismissed.

6.4.1 Maximize Open Space

This alternative would convert several existing and proposed surface and structured parking areas to open space to maximize open space on campus. Open space could also be maximized from X Street between 48th and 49th Street near the future Eye Center. The purpose of this alternative would be to create a campus that is more pedestrian friendly and welcoming to the community. This alternative would also allow more stormwater infiltration and reduce the heat island effect due to reduced impervious surface on campus.

The goals and objectives of the 2020 LRDP include prioritizing the efficient movement between Aggie Square, UC Davis Hospital and nearby clinics. The goals and objectives also entail creating new state-of-the-art facilities for science, education and research, as well as providing public space for use by both the Sacramento County Health Center and the broader community. To accommodate development of the full program under the Maximize Open Space Alternative, building heights would need to be increased, which would result in additional aesthetic impacts, as well as additional shading on landscaped areas. This alternative implements landscape design and tree plantings and includes public facilities such as benches and gathering areas, so both the project goals and objectives, as well as the benefits of open space and landscaping, can be achieved.

While this alternative would add additional campus open space and landscaping, which could make the campus more welcoming to the community, it was rejected because it would not make efficient use of limited campus land resources or facilitate additional facilities where the increased demand in community health care needs can be met more efficiently. Taller buildings could also serve as a barrier to campus interaction and collaboration and increase the amount of time traveling through and between buildings.

6.4.2 Offsite Aggie Square Location Alternative

This alternative would use an offsite location for Aggie Square. By locating Aggie Square away from the Sacramento Campus, impacts would be distributed across a wider area and not concentrated near the Sacramento Campus and adjacent neighborhoods. Additional structures would be built as needed.

This alternative was rejected because it does not meet the project objectives of creating Aggie Square as a collaborative ecosystem, and entrepreneurship would be less effective if it were not located on the Sacramento Campus where work would seamlessly tie into the hospital project. Additionally, this alternative would not provide efficient movement between Aggie Square, UC Davis Hospital and nearby clinics. Furthermore, this alternative could result in increased VMT and associated air quality and GHG emissions related to longer trip lengths. More parking would also be required, as there would be fewer opportunity to share parking between different land uses on the Sacramento Campus.

6.4.3 Housing-Focused Alternative

This alternative would convert proposed education and research buildings to housing along V Street at 49th Street south of the existing nursing building to increase the overall number of housing units on the Sacramento Campus. While this alternative would provide increased on-campus housing opportunities for students, staff, and faculty, it would potentially displace buildings that would facilitate growth of teaching, research and education initiatives, and growth in job creation and workforce development for health care professionals. A housing-focused alternative could potentially reduce VMT associated with the Sacramento Campus because there would be fewer residents on-campus than there would be associated with the on-site daily population of Aggie Square Phase I in terms of employees, students, and staff. This alternative would also reduce the Sacramento Campus' ability to prioritize teaching, education, and hospital uses by shifting the priority of this space to housing. This alternative was rejected because it does not meet the overall project objectives.

6.5 Alternatives Considered in Detail

The following alternatives are under consideration for this project.

Alternative 1: No Project. The No Project Alternative would not proceed with 2020 LRDP Update implementation, and the existing 2010 LRDP would continue to guide campus long-range development.

Alternative 2: Reduced Development Program. The Reduced Development Alternative would proceed with 2020 LRDP Update implementation, but with an overall reduction in planned campus development. New development under the 2020 LRDP Update is projected to be 3,400,189 gsf. The Reduced Development Program would limit new development on the Sacramento Campus by approximately 30 percent. Development would be reduced partially by limiting Aggie Square building heights. Under the Reduced Development Program, new building square footage would be 1,020,056 gsf.

Alternative 3: Alternative Land Use Plan. The Alternative Land Use Plan Alternative would relocate Aggie Square to the Cypress Building area in the northwest corner of the campus.

Alternative 4: Offsite Housing and Offices. The Offsite Housing and Offices Alternative would locate the 2020 LRDP Update's proposed housing component and a portion of the administrative, education, and community serving space to an offsite location and into existing nearby vacant office and/or retail buildings.

6.5.1 Evaluation of Alternatives

Alternative 1: No Project (Continue with 2010 LRDP Implementation)

CEQA Guidelines Section 15126.6(e)(1) requires describing and analyzing the no project alternative to allow decision makers to compare the impacts of approving the project with the impacts of not approving the project. The no project analysis is required to discuss existing conditions at the time the notice of preparation is published and what would be reasonably expected to occur if the project were not approved.

The 2010 LRDP is the existing long-range development plan for the Sacramento Campus, and continued implementation of the existing plan would occur if the proposed 2020 LRDP Update is not adopted. Under provisions of the 2010 plan, additional growth would occur primarily associated with new buildings and reconfigured square footage in the hospital, patient care, and education components of the campus. Since the existing 2010 LRDP does not include housing or community serving uses, these would not be included under the No Project Alternative.

Because the existing 2010 LRDP would continue to guide development on campus, the No Project Alternative would not preserve the existing environmental conditions. Impacts analyzed in the 2010 LRDP Final EIR would still occur. Individual projects would proceed through individual CEQA approvals and amendments to the 2010 LRDP Final EIR, as necessary.

Aesthetics

The No Project Alternative assumes that the 2010 LRDP would remain in effect. The aesthetic impacts of the No Project Alternative are the same as those found in the 2010 LRDP Final EIR. Therefore, the aesthetic impacts of the No Project Alternative would be the same as the baseline condition. (Similar impact)

Air Quality

Implementation of the No Project Alternative would result in a significant and unavoidable air quality impact from short-term construction activities (as discussed in the 2010 LRDP Final EIR). However, the No Project Alternative would result in less development than the 2020 LRDP Update, and thus, would generate less construction and operations-related air emissions. Compared to the 2020 LRDP Update, this alternative would result in approximately 7 percent less square footage and associated construction activity. Implementation of the No Project Alternative would also result in decreased operational emissions associated with the 2020 LRDP Update, which would be due to decreased vehicle trips and activities on the Sacramento Campus. However, by not providing on-campus housing this alternative could result in more commuters and some emissions and VMT could potentially increase compared to the 2020 LRDP Update. It is anticipated that overall the reduction in construction and operational emissions would achieve corresponding reductions in health risks from receptor exposure to these emissions. Because new development and campus growth anticipated under this alternative would be reduced, air quality impacts would be lesser degree of impacts compared to the 2020 LRDP Update. (Less impact)

Biological Resources

Under the No Project Alternative, there would be no new impacts on sensitive biological resources that are not already discussed and mitigated for under the existing 2010 LRDP Final EIR. (Less impact)

Archaeological, Historical, and Tribal Cultural Resources

Earth-moving activities on the Sacramento Campus have the potential to disturb archaeological, tribal cultural, and/or historic resources or result in accidental discovery of human remains. Under the No Project Alternative, ground-disturbing activities (e.g., grading, excavation) could result in discovery of archaeological resources, tribal cultural resources, or human remains. Additionally, on-campus development within or near potentially historic structures under both the No Project Alternative and the 2020 LRDP Update could result in potentially significant and unavoidable

impacts. Because there would be less earth-moving activities under the No Project Alternative, there would be a lesser degree of potential impacts on cultural resources. (Less impact)

Energy

Under the No Project Alternative less development would occur, including development of more energy-efficient structures and facilities. Less construction would correspond to less fuel consumption due to a less populated campus. Therefore, impacts would be less than significant under this alternative and less than the 2020 LRDP Update due to the lesser overall demand for energy generated by the Sacramento Campus. (Less impact)

Geology, Soils, and Seismicity

Earth-moving activities associated with construction under the 2020 LRDP Update and this No Project Alternative have the potential to affect geology and soils. The types of impacts that could occur from development on the Sacramento Campus under the 2020 LRDP Update include geotechnical issues, increased erosion, and exposure of buildings and people to seismic hazards. Existing regulations and permitting requirements, such as California Building Code (CBC) requirements, National Pollutant Discharge Elimination System (NPDES) permit conditions, and best management practices (BMPs) would reduce potentially significant impacts to a less-than-significant level. Although both the No Project Alternative and the 2020 LRDP Update impacts would be less than significant, the impacts resulting from the No Project Alternative would be less because there would be less development. (Less impact)

Greenhouse Gas Emissions

Due to the lower level of on-campus development under this alternative, there would be less construction-related greenhouse gas (GHG) emissions compared to the 2020 LRDP Update. However, consistent with the UC Sustainable Practices Policy (University of California 2019) and actions outlined in the *2009–2010 Climate Action Plan* (CAP) (University of California, Davis 2010), Sacramento Campus emissions would be required to be net zero for Scopes 1 and 2 by 2025 and net zero from all sources (including onroad mobile) by 2050 under both the No Project Alternative and the 2020 LRDP Update. While implementation of the 2020 LRDP Update would involve placing new energy efficient structures in available land and adjusting land use patterns to capture efficiencies related to alternative transportation (i.e., transit, bicycle, and pedestrian travel), the No Project Alternative would emit less GHG emissions overall because it would result in less development. (Less impact)

Hazards and Hazardous Materials

Under the 2020 LRDP Update and the No Project Alternative, on-campus construction activities would entail the transport, use, and storage of hazardous materials and potential release of hazardous materials. Feasible mitigation measures are available to reduce these impacts to a less-than-significant level. In addition, disruption of area roadways during construction may hinder traffic flow and affect emergency response; however, existing emergency response plans are adequate to prepare, mitigate, and respond to any type of threat or hazard or incident that could affect the demand for services provided by the Sacramento Campus. Similar types of impacts would occur under this alternative although to a lesser degree as a result of reduced construction efforts. (Less impact)

Hydrology and Water Quality

Earth-moving activities associated with construction under the 2020 LRDP Update and the No Project Alternative have the potential to affect hydrology and water quality on the Sacramento Campus to a lesser extent compared to implementation of the 2020 LRDP. The types of impacts that could occur from development under the 2020 LRDP Update include adverse effects on water quality, reduced groundwater recharge, and alterations to existing drainage systems. Existing regulations and permitting requirement such as NPDES permit conditions and a stormwater pollution prevention plan (SWPPP) would reduce potentially significant impacts to a less-than-significant level. In addition, development of additional ambulatory care, education and research, hospital and support space would be required to comply with existing regulations that would reduce impacts to a less-than-significant level. Because this alternative would require less development, the severity of impacts would be less when compared to the 2010 LRDP. (Less impact)

Land Use and Planning

Under the No Project Alternative, there would be no changes associated with existing land use and planning as under the 2020 LRDP Update. This alternative would continue the existing 2010 LRDP land use plan. Further, as development would likely occur on the Sacramento Campus and adjacent to existing hospital/ambulatory care/education and research space, the potential for impacts would be less under this alternative due to a decreased potential for conflicts between new uses and existing land uses. (Less impact)

Noise

Under the No Project Alternative, the 2010 LRDP would continue to be implemented as approved. The No Project Alternative would result in less development than under the 2020 LRDP Update and would therefore potentially result in less construction and operational noise impacts. There would be reduced noise impacts related to emergency helicopter activity compared to the 2020 LRDP Update. Overall, the No Project Alternative would result in less severe noise and vibration impacts than the Project because it would result in less development. (Less impact)

Population and Housing

Under the No Project Alternative, the 2010 LRDP would continue to be implemented as approved. As described in the 2010 LRDP Final EIR, implementation would not induce substantial population growth. No new facilities, other than those envisioned in the 2010 LRDP, would be constructed or expanded under this alternative. Therefore, a lesser degree of impact would occur under the No Project Alternative compared to the 2020 LRDP Update. (Less impact)

Public Services

Under the No Project Alternative, there would be no residential units provided on campus. In comparison, the 2020 LRDP Update would add approximately 324 housing units. Under the No Project Alternative, on-campus employment could grow over time to the amount previously anticipated in the 2010 LRDP. The estimated number of new employees under the 2010 LRDP is not anticipated to result in a need for additional housing beyond the current projections of the local jurisdiction, but housing demand would be slightly greater under the No Project Alternative, as no housing would be provided on campus. It is anticipated that employees would live throughout the

Sacramento metropolitan region and would not result in impacts to public services by increasing the need for new facilities or services (Similar impact)

Recreation

Under the No Project Alternative, the 2010 LRDP would continue to be implemented as approved. As described in the EIR for the 2010 LRDP, the implementation of the project would not substantially increase demand for park and recreational facilities. No new recreational facilities would be constructed or expanded under this plan. Therefore, the No Project Alternative would have a less-than-significant impact. (Less impact)

Transportation and Circulation

Under the No Project Alternative, there could be some additional vehicle trips associated with increases in employees as planned under the existing 2010 LRDP. Overall, there would be fewer vehicles trips associated with the on-site daily population, including students and employees, compared to the 2020 LRDP Update. The No Project Alternative would generate fewer trips overall due to lower daily on-site population levels. The No Project Alternative would also not increase delay in transit services. However, without on-site housing, trip lengths would increase and could result in additional VMT. Nevertheless, with the reduced on-site daily population, overall impacts on intersections, transit, local roadways would be less under this alternative. (Less impact)

Utilities and Service Systems

Under the No Project Alternative, there would be less additional demand on utilities and fewer requirements to alter or expand infrastructure compared to the 2020 LRDP Update because population and building square footage levels would be lower. In general, impacts would be less under the No Project Alternative but remain less than significant. (Less impact)

Alternative 2: Reduced Development Program

Under the Reduced Development Program Alternative, UC Davis would proceed with the 2020 LRDP Update but with an overall reduction in planned campus development compared with the 2020 LRDP Update, particularly associated with Aggie Square Phase I. The addition of Aggie Square Phase I and other future projects would still be incorporated into the 2020 LRDP Update but would be reduced in size through a limit on square footage and through reducing the proposed Aggie Square building height to no more than four stories. The intent of the Reduced Development Program Alternative is to reduce the amount of new building square footage, and correspondingly reduce the future campus population, which is intended to reduce aesthetic, transportation, noise, air quality, and GHG impacts associated with implementation of the 2020 LRDP Update.

A reduction in development at the Sacramento Campus by approximately 30 percent would reduce the proposed new building square footage from 3,400,189 gsf to approximately 1,020,056 gsf. This reduction in gsf is partially related to limiting the Aggie Square Phase I development, but also by limiting other development on campus. A reduction in square footage of that scale would cause a resultant reduction in proposed campus population growth of approximately 30 percent, or an increase of about 1,366 instead of the full increase described for the proposed project. This would bring the total campus daily on-site population to approximately 19,834, which is slightly above what was analyzed in the 2010 LRDP Final EIR.

Aesthetics

The Reduced Development Program Alternative would proceed with the 2020 LRDP Update but with an overall reduction in planned campus development. It would also reduce the heights of development in the Hospital District and the Education, Research, and Housing District. The Reduced Development Program Alternative would reduce impacts related to the scale of development in these areas even more. Therefore, the Reduced Development Program Alternative would slightly reduce visual less-than-significant impacts related to visual quality and character. Impacts related to light and glare would be reduced because shorter buildings will have less area of reflective surfaces. (Less impact)

Air Quality

The types of air quality impacts under the Reduced Development Program Alternative would be similar to those described for the 2020 LRDP Update, but to a lesser magnitude. This alternative would include less development (approximately 415,350 gsf less) than the 2020 LRDP Update, and thus, would emit fewer overall emissions during construction. Long-term operational emissions would likewise be fewer than the 2020 LRDP Update due to reductions in square footage (and thus energy consumption) and vehicle trips. Nonetheless, as with the 2020 LRDP Update, construction and operation of new buildings under the Reduced Development Program Alternative would generate air emissions that could exceed the SMAQMD's significance thresholds and expose sensitive receptors to substantial pollutant concentrations. Although the overall level of campus development would be less under this alternative, the types and overall magnitude of emissions would likely be similar and result in similar potential impacts to air quality. With less of a population increase as compared to the proposed project, emissions and associated VMT would be less than the proposed project. However, a reduction in planned housing for the campus could result in more commuters and some emissions and VMT could potentially increase under this alternative. Because the overall level of campus development would be less under this alternative, the types and overall magnitude of emissions would likely be reduced and result in lower impacts to air quality. (Less impact)

Biological Resources

Under the Reduced Development Program Alternative, impacts on vegetation-nesting migratory birds and raptors and protected trees could be less than those anticipated for the project due to the reduced building square footages. If the extent of demolition under this alternative would be less than under the project, impacts could also be reduced for structure-nesting migratory birds and bats. If the demolition would be the same as the project, these impacts would be expected to be the same. No additional impacts on sensitive biological resources would be anticipated under the Reduced Development Program Alternative. (Less impact)

Archaeological, Historical, and Tribal Cultural Resources

Earth-moving activities on the Sacramento Campus have the potential to disturb archaeological, tribal cultural, or historical resources, or result in accidental discovery of human remains. Under the 2020 LRDP Update, ground-disturbing activities (e.g., grading, excavation) could also result in the discovery of archaeological resources, tribal cultural resources, or human remains. Additionally, on-campus development within or near potentially historical structures under both this alternative and the 2020 LRDP Update would result in potentially significant and unavoidable impacts. Because the

overall level of campus development would be less under the Reduced Development Program Alternative, the area required for development and associated excavation and other construction activities would likely result in reduced impacts on archaeological, historical, and tribal cultural resources. (Less impact)

Energy

Under the Reduced Development Program alternative, there would be less building square footage developed. This reduced development would equate to less energy being used than under the 2020 LRDP Update. Therefore, impacts would be less than the 2020 LRDP Update due to the lower overall demand for energy generated by the Sacramento Campus. (Less impact)

Geology, Soils, and Seismicity

Earth-moving activities associated with construction under the 2020 LRDP Update and the Reduced Development Program Alternative have the potential to affect geology and soils. The types of impacts that could occur from development on the Sacramento Campus under the 2020 LRDP Update include geotechnical issues, increased erosion, and exposure of buildings and people to seismic hazards. Existing regulations and permitting requirements, such as CBC requirements, NPDES permit conditions, and BMPs would reduce potentially significant impacts to a less-than-significant level. Similarly, the Reduced Development Program Alternative impacts would be less than significant. Even though this alternative involves a lesser overall level of development, the general areas where development would occur would be subject to similar geologic impacts. Thus, impacts would be of similar type and magnitude. (Similar impact)

Greenhouse Gas Emissions

Due to the lesser level of development on-campus under this alternative, there would be fewer GHG emissions associated with new development during construction. With respect to operation, this alternative would result in approximately 1,020,056 gsf of development, which translates into operational emissions associated with building use including electricity, natural gas, and water. Less housing could result in increased VMT due to increased trip lengths. However, consistent with the UC Sustainable Practices Policy (University of California 2019), the Sacramento Campus emissions would be required to be net zero for Scopes 1 and 2 in 2025 and net zero for Scopes 1, 2, and 3 in 2050 under this alternative, similar to the 2020 LRDP Update. Thus, this alternative would also result in lower emissions. (Less impact)

Hazards and Hazardous Materials

Under the Reduced Development Program Alternative and the 2020 LRDP Update, on-campus construction activities would entail the transport, use, and storage of hazardous materials and potential release of hazardous materials. In addition, disruption of area roadways during construction may hinder traffic flow and affect emergency response. However, required traffic control plans and feasible mitigation measures are available to reduce these impacts to a less-than-significant level. The types of hazards and hazardous materials impacts described for this alternative would be of similar type and magnitude as the 2020 LRDP Update. (Similar impact)

Hydrology and Water Quality

Earth-moving activities associated with construction under the 2020 LRDP Update and the Reduced Development Program Alternative have the potential to affect hydrology and water quality on the Sacramento Campus. The types of impacts that could occur as a result of development under the 2020 LRDP Update include adverse effects on water quality, reduced groundwater recharge, and alterations to existing drainage systems. Existing regulations and permitting requirement, such as NPDES permit conditions and an SWPPP would reduce potentially significant impacts to a less-than-significant level. Similarly, under the Reduced Development Program Alternative, development of additional on-campus structures and facilities would be required to comply with existing regulations same as the 2010 LRDP. Development of these additional facilities would reduce potentially significant impacts to a less-than-significant level. Impacts under this alternative would be similar to the 2010 LRDP. (Similar impact)

Land Use and Planning

Under the Reduced Development Program Alternative, there would be changes to the existing campus land use pattern, similar to the 2020 LRDP Update. Additional ambulatory care/education and research/hospital/support/parking/open space would be developed on the Sacramento Campus and would involve densifying existing land uses in some areas. Development along the campus periphery where potential land use conflicts may occur would still happen, although building heights would be less than under the 2020 LRDP Update. As a result, the potential for land use conflicts would be less than the 2020 LRDP Update. (Less impact)

Noise

The types of noise and vibration impacts under the Reduced Development Program Alternative would be similar to those described for the 2020 LRDP Update, but to a lesser magnitude. In addition, although the increase in hospital square footage developed under this alternative may be lower, it is likely that emergency helicopter would still increase under this alternative, similar to the 2020 LRDP Update. The types and amounts of equipment required for individual construction projects and the types and amounts of operational stationary sources of noise installed would be similar to the 2020 LRDP Update, resulting in similar noise and vibration impacts. However, the overall level of campus development would be less under this alternative, which would require fewer individual days of construction and potentially fewer stationary noise generating sources (e.g., mechanical heating, cooling and ventilation equipment) (Less impact)

Population and Housing

Growth under the proposed 2020 LRDP Update would increase population at the Sacramento Campus but would not result in substantial population growth in the Sacramento metropolitan area. The Reduced Development Program Alternative would reduce population growth at the project site in comparison to the 2020 LRDP Update because there would be less building square footage. The impacts associated with population and housing would be reduced compared to the Project. (Less impact)

Public Services

The Reduced Development Program Alternative would result in an increase in demand for public services similar to the 2020 LRDP Update but to a lower demand. Similar to the 2020 LRDP Update,

the Reduced Development Alternative would result in public service impacts that would be less than significant because the alternative would not involve an increase in service area boundaries or introduce uses that would require special consideration by public service providers. (Less impact)

Recreation

The Reduced Development Program Alternative would result in a small increase population and therefore an increased demand for recreational facilities. The increase in population would be less under the project and therefore demand would also be less. As with 2020 LRDP Update, this impact would be less than significant. As 2020 LRDP Update, the Reduced Development Alternative would not result in the construction of any new recreational facilities. (Less impact)

Transportation and Circulation

Under the Reduced Development Program Alternative, reduced development space would decrease the level of on-campus activity and associated vehicle commute trips, although there would still be more activity (including VMT and transit trips) compared to the No Project Alternative. The daily on-site population would be reduced by approximately 1,366, and as such there would be fewer vehicle commute trips and fewer transit trips resulting in fewer impacts to transit; whereas the proposed project would result in a significant and unavoidable impact on transit. The reduction in on-campus housing could contribute to increased commutes and VMT. Overall, the increase in population associated with this alternative is very similar to what was analyzed in the 2010 LRDP Final EIR, and impacts on transit ridership and VMT would be less than those associated with implementation of the 2020 LRDP. (Less impact)

Utilities and Service Systems

Under the Reduced Development Program Alternative, there would be less building square footage developed. This reduced development would equate to less water use compared to the 2020 LRDP Update. In addition, there would be less solid waste. Therefore, impacts would be less than significant under the Reduced Development Alternative and would be less than the 2020 LRDP Update due to the lower overall demand for utilities generated by the Sacramento Campus. (Less impact)

Alternative 3: Alternative Land Use Plan

Under the Alternative Land Use Plan Alternative, Aggie Square Phase I site would be relocated to the Cypress side of the campus, which is in the northwest corner of the campus south of V Street and east of Stockton Boulevard. The Cypress Building would have to either be demolished or renovated to make room for Aggie Square Phase I (demolition of the Cypress Building is also part of the 2020 LRDP Update). The Aggie Square Phase I site would remain in its current use until such time that new Education, Research and & Housing uses are developed.

The intent of the Alternative Land Use Plan Alternative is to move the more intensive Aggie Square land uses to a portion of the campus that is closer to U.S. Highway 50. This would move the traffic impacts of the proposed 2020 LRDP Update from the Broadway and Stockton Boulevard intersection and adjacent residential areas closer to the freeway. Building heights would likely need to be higher to accommodate the Aggie Square development at this location, which could result in additional visual impacts.

Aesthetics

The Alternative Land Use Plan Alternative would relocate some Education, Research, and Housing development to the Cypress Building area in the northwest corner in the Hospital District. Assuming that demolition or additional floors would be required to accommodate the Aggie Square development at the Cypress location due to smaller site area, the aesthetic impacts would likely be greater than under the 2020 LRDP Update. This part of campus is nearer to the residential neighborhood along V Street, whereas the current site of the proposed Aggie Square Phase I project is along Stockton Boulevard, which is primarily a commercial corridor. Therefore, the Alternative Land Use Plan Alternative would not reduce the less-than-significant impacts related to visual quality and character and light and glare. (Greater impact)

Air Quality

The types of air quality impacts under the Alternative Land Use Plan Alternative would be similar to those described under the 2020 LRDP Update, but would be of greater magnitude for receptors exposed to substantial pollutant concentrations. The Alternative Land Use Plan Alternative would result in the same amount of development (i.e., 7.07 million gsf) as the 2020 LRDP Update. As a result, the Alternative Land Use Plan Alternative would emit the same overall emissions during construction and long-term operation. Because Aggie Square Phase I would be relocated further from the Sacramento Language Academy, health risks to Sacramento Language Academy attendees from exposure to air pollution generated by implementation of Aggie Square Phase I would be reduced. However, residential receptors north of V Street and patients at the main hospital could be exposed to increased pollutant concentrations and associated health risks because the development would be nearer to the hospital. As a result of concentrating development on the northwestern side of the campus, health risks from receptor exposure to toxic air contaminants near this part of the campus would be greater under the Alternative Land Use Plan Alternative than the 2020 LRDP Update. Mitigation Measures LRDP-AQ-1, LRDP-AQ-2a through LRDP-AQ-2e, and LRDP-AQ-3a identified in Section 3.2, *Air Quality*, could be required, but the potential for significant and unavoidable air quality impacts would likely remain significant and unavoidable. (Greater impact)

Biological Resources

Because the proposed extent of development under the Alternative Land Use Plan Alternative would be the same as under 2020 LRDP Update, the impacts under the Alternative Land Use Plan Alternative on vegetation-nesting migratory birds and raptors, structure-nesting migratory birds, bats, and protected trees would be similar to those under the 2020 LRDP Update. It is likely that elderberry shrubs in the open space area would be unaffected if Aggie Square Phase I is moved to a different part of the campus. No additional impacts on sensitive biological resources would be anticipated under the Alternative Land Use Plan Alternative. (Less impact)

Archaeological, Historical, and Tribal Cultural Resources

Earth-moving activities on the Sacramento Campus have the potential to disturb archaeological, tribal cultural, or historical resources, or result in accidental discovery of human remains. The area affected by construction of new facilities under the Alternative Land Use Plan Alternative would have a similar size footprint as the proposed 2020 LRDP Update; therefore, impacts would be similar. Mitigation measures would still be required that would reduce impacts to less-than-significant levels. The significant and unavoidable project-level (i.e., Impact LRDP-CUL-1) and

cumulative impact to historical resources would not be reduced to less than significant because the alternative may still impact potential historical resources. The alternative would have a potential for the same types of potentially significant cultural resource impacts as the project and the same mitigation measures would be required. (Similar impact)

Energy

Under the Alternative Land Use Plan Alternative, a similar level of development would occur, including development of more energy efficient structures and facilities. Energy efficiency per person on campus would be similar under the Alternative Land Use Plan Alternative and the 2020 LRDP Update, and the overall level of energy consumption would be similar. Additional energy use under the Alternative Land Use Plan Alternative and the 2020 LRDP Update, including fuel consumption and electricity and natural gas use, would not result in the wasteful or inefficient use of energy in a manner inconsistent with applicable plans, policies, and regulations pertaining to energy efficiency. Therefore, impacts would be less than significant under the Alternative Land Use Plan Alternative, and would be similar to the 2020 LRDP Update due to a similar overall demand for energy generated by the Sacramento Campus. (Similar impact)

Geology, Soils, and Seismicity

Earth-moving activities associated with construction under the 2020 LRDP Update and the Alternative Land Use Plan Alternative have the potential to affect geology and soils. The types of impacts that could occur from development on the Sacramento Campus under the 2020 LRDP Update include geotechnical issues, increased erosion, and exposure of buildings and people to seismic hazards. Existing regulations and permitting requirements, such as CBC requirements, NPDES permit conditions, and BMPs, would minimize potential effects and the impacts would be less than significant. Similarly, the Alternative Land Use Plan Alternative would result in impacts that are less than significant. The Alternative Land Use Plan Alternative involves a similar overall level of development, and the general areas where development would occur would be subject to similar geologic impacts. Thus, impacts would be of similar type and magnitude. (Similar impact)

Greenhouse Gas Emissions

The amount of GHG emissions under the Alternative Land Use Plan Alternative would be similar to those described under the 2020 LRDP Update. A similar amount of construction would take place, and construction emissions would be approximately the same. The operational emissions would also be approximately the same as the 2020 LRDP Update because the building square footage and population increase would be the same under Alternative 3. Consistent with the UC Sustainable Practices Policy (University of California 2019), the Sacramento Campus emissions would be required to be net zero for Scopes 1 and 2 in 2025 and net zero for Scopes 1, 2, and 3 in 2050 under this alternative, similar to the 2020 LRDP Update. Thus, this alternative would also result in less than significant impacts. (Similar impact)

Hazards and Hazardous Materials

Under the Alternative Land Use Plan Alternative and the 2020 LRDP Update, on-campus construction activities would entail the transport, use, and storage of hazardous materials and potential release of hazardous materials. In addition, disruption of area roadways during construction may hinder traffic flow and affect emergency response. However, required traffic

control plans and feasible mitigation measures are available to reduce these impacts to a less-than-significant level. The types of hazards and hazardous materials impacts described for this alternative would be of similar type and magnitude as the 2020 LRDP Update. (Similar impact)

Hydrology and Water Quality

Earth-moving activities associated with construction under the 2020 LRDP Update and this alternative have the potential to affect hydrology and water quality on the Sacramento Campus. The types of impacts that could occur from development under the 2020 LRDP Update include adverse effects on water quality, reduced groundwater recharge, and alterations to existing drainage systems. Existing regulations and permitting requirement, such as NPDES permit conditions and an SWPPP, would reduce potentially significant impacts to a less-than-significant level. Similarly, under this alternative, development of additional on-campus structures and facilities would be required to comply with existing regulations. A similar level of development would occur under this alternative as the 2020 LRDP Update, just in different locations. Impacts under this alternative would, therefore, be less than significant and similar to the 2020 LRDP Update. (Similar impact)

Land Use and Planning

Under the Alternative Land Use Plan Alternative, there would be changes to the existing campus land use pattern similar to the 2020 LRDP Update. The only difference would be that the Aggie Square Phase I site and would relocate to the Cypress side of the campus. Development along the campus periphery where potential land use conflicts may occur would still happen, similar to the 2020 LRDP Update. As a result, the potential for land use conflicts would be similar to the 2020 LRDP Update and less than significant. (Similar impact)

Noise

The noise and vibration quality impacts under the Alternative Land Use Plan Alternative would be similar to those described under the for the 2020 LRDP Update. This Alternative would result in approximately the same amount of development as the 2020 LRDP Update, therefore resulting in the same construction noise and vibration impacts as identified for the 2020 LRDP Update. Similarly, the potential for operations to generate excessive noise levels (e.g., from amplified music at Aggie Square, mechanical equipment, emergency generators, and emergency helicopters) would be similar. The alternative would have the same types of impacts as the project and the same mitigation measures would be required. (Similar impact)

Population and Housing

Growth under the proposed 2020 LRDP Update would increase the average daily population at the campus but would not result in any substantial population growth in the Sacramento metropolitan area. Population growth associated with the Alternative Land Use Plan Alternative would be similar to the 2020 LRDP Update. Therefore, population and housing impacts under this alternative would be comparable and less than significant. (Similar impact)

Public Services

The Alternative Land Use Plan Alternative would result in the same average daily population as the 2020 LRDP Update. Therefore, demands for public services and recreational facilities would be the

same. Similar to the 2020 LRDP Update, impacts related to public services would be less than significant. (Similar impact)

Recreation

The Alternative Land Use Plan Alternative would result in essentially the same amount of park users as would the 2020 LRDP Update. As a result, demand would be similar for recreational facilities. The impact would be less than significant and of a similar magnitude as the 2020 LRDP Update. As with the 2020 LRDP Update, no new recreational facilities would be constructed. (Similar impact)

Transportation and Circulation

Under the Alternative Land Use Plan Alternative, the same level of development would occur, and thus new vehicle commute trips would occur similar to the 2020 LRDP Update. However, under this alternative, Aggie Square Phase I would be located near the existing Cypress Building, which would be demolished. Entrances to Aggie Square Phase I would be shifted north on Stockton Boulevard toward V Street. Although the circulation patterns would be shifted, the impacts would be similar to those described under the 2020 LRDP Update. (Similar impact)

Utilities and Service Systems

Under the Alternative Land Use Plan Alternative, a similar level of development would occur compared to the 2020 LRDP Update. Utility use on campus would be similar under the Alternative Land Use Plan Alternative and the 2020 LRDP Update. Additional water use under the Alternative Land Use Plan Alternative and the 2020 LRDP Update, and the generation of wastewater, stormwater, and solid waste would be similar to impacts described under the 2020 LRDP Update. Therefore, impacts would be less than significant under the Alternative Land Use Plan Alternative and similar to the 2020 LRDP Update due to a similar overall demand for utilities generated by the Sacramento Campus. (Similar impact)

Alternative 4: Offsite Housing and Offices

Under the Offsite Housing and Offices Alternative, the changes proposed under the 2020 LRDP Update would still occur; however, some of the components would be provided at offsite locations. The Offsite Housing and Offices Alternative is intended to address several of the project impacts, such as increased aesthetics, air quality, and traffic impacts, that would occur in the immediate vicinity of the campus and disperse those impacts over a broader area away from the campus.

Near the campus, there are existing commercial and office buildings that are vacant or underutilized, or a combination of both. However, a large number of buildings would be required as the Aggie Square Phase I project includes several high-rise buildings. The existing buildings or the site on which they are located could serve as locations for retrofitting those buildings to serve the office needs of UC Davis Health or they could be redeveloped/retrofitted to provide a location for the proposed 324 units of student housing.

Aesthetics

The Offsite Housing and Offices Alternative would locate the proposed housing component of the 2020 LRDP Update and a portion of the administrative, education, and community-serving space at an offsite location and in existing nearby vacant office and/or retail buildings. Because these uses

would no longer be built on the Sacramento Campus, the less-than-significant aesthetic impacts would be less on-campus, because fewer new buildings would be constructed, and impacts from high-rise buildings and reflective surfaces and light and glare would be less. Assuming the housing, administrative, education, and community-serving components would use existing or retrofitted/reconstructed buildings off-site, this would reduce impacts at the Sacramento Campus but could result in new significant impacts offsite. Therefore, the Offsite Housing and Offices Alternative would further reduce visual impacts related to visual quality and character and light and glare. (Similar impact)

Air Quality

The types of air quality impacts under the Offsite Housing and Offices Alternative would be similar to those described under the for the 2020 LRDP Update but would be of a lesser magnitude. The Offsite Housing and Offices Alternative would result in the same amount of development (7.07 million gsf as the 2020 LRDP Update, and thus, would emit similar overall emissions during long-term operation. If existing buildings were used, emissions would be less. If retrofitted buildings were used, emissions would be similar to the 2020 LRDP Update. Relocating a portion of development off the Sacramento Campus would reduce localized pollutant concentrations generated during construction, and thus associated health risks to onsite (e.g., hospital) and adjacent receptors. Construction and operational emissions would be generated at the offsite locations selected to accommodate development. These emissions would be spread among the various locations, thereby dispersing localized pollutant concentrations and associated ambient health risks.

Although localized pollutant concentrations would be less under the Offsite Housing and Offices Alternative, regional impacts on air quality from the total amount of emissions generated under this alternative would be similar to those under the 2020 LRDP Update. Likewise, given the amount of development that would remain on campus, the potential for health risks to onsite and receptors adjacent to the campus to be exposed to substantial pollutant concentrations would remain. (Less impact)

Biological Resources

If the extent of on-campus development is reduced under the Offsite Housing and Offices Alternative as compared to the 2020 LRDP Update, the impacts under this alternative on vegetation-nesting migratory birds and raptors, structure-nesting migratory birds, bats, and protected trees could be slightly less than those under 2020 LRDP Update. Bats could be roosting in off-site buildings, and if so, impacts would be greater on that species. No additional impacts on sensitive biological resources would be anticipated under the Offsite Housing and Offices Alternative. (Similar impact)

Archaeological, Historical, and Tribal Cultural Resources

Earth-moving activities on the Sacramento Campus have the potential to disturb archaeological, tribal cultural, and/or historical resources, or result in accidental discovery of human remains. Under the 2020 LRDP Update, ground-disturbing activities (e.g., grading, excavation) could result in the discovery of archaeological resources, tribal cultural resources, or human remains. However, feasible mitigation measures and regulatory requirements/procedures would reduce these impacts to a less-than-significant level. Additionally, on-campus development in or near potentially historic structures under both the Offsite Housing and Offices Alternative and the 2020 LRDP Update would result in potentially significant and unavoidable impacts. The 2020 LRDP Update's proposed

housing component being located on offsite vacant land could result in the potential to disturb archaeological, tribal cultural, or historical resources, or result in accidental discovery of human remains. The location of administrative, education, and community serving space uses into existing buildings would have no effect on cultural resources unless the buildings to be utilized are historic. The overall level of campus development would be less under the Offsite Housing and Offices Alternative; therefore, potential impacts to archaeological, historical, and tribal cultural resources would be less than the 2020 LRDP Update. (Less impact)

Energy

Under the Offsite Housing and Offices Alternative, a similar level of development would occur compared to the 2020 LRDP Update, just at offsite nearby locations for the proposed housing component and a portion of the administrative, education, and community serving space. Some of the offsite buildings would probably not be as energy efficient as future buildings would be under the 2020 LRDP Update at the Sacramento Campus. The offsite buildings would still be owned and operated by UC Davis and would have to meet the Sustainability Practices Policy targets for reduction in energy use. The additional energy use, including fuel consumption and electricity and natural gas use, would not result in the wasteful or inefficient use of energy in a manner inconsistent with applicable plans, policies, and regulations pertaining to energy efficiency. Therefore, impacts would be less than significant under this alternative but speculative as to whether the energy efficiency of offsite buildings would be as energy efficient as future buildings under the 2020 LRDP Update. (Similar impact)

Geology, Soils, and Seismicity

Earth-moving activities associated with construction under the 2020 LRDP Update and the Offsite Housing and Offices Alternative have the potential to affect geology and soils. The types of impacts that could occur from development on the Sacramento Campus include geotechnical issues, increased erosion, and exposure of buildings and people to seismic hazards. Existing regulations and permitting requirements, such as CBC requirements, NPDES permit conditions, and BMPs would reduce potentially significant impacts to a less-than-significant level. Similarly, this Offsite Housing and Offices Alternative would result in impacts that are less than significant through regulatory compliance. Even though this alternative involves a similar overall level of development (but at some offsite locations for the housing component and some of the administrative, education, and community serving space), the general areas where development would occur would also be subject to similar geologic impacts. Thus, impacts would be of similar type and magnitude. (Similar impact)

Greenhouse Gas Emissions

Greenhouse Gas emissions under the Offsite Housing and Offices Alternative would be similar to those described under the for the 2020 LRDP Update, but would be of a lesser magnitude. The Offsite Housing and Offices Alternative would result in the same amount of development (7.07 million gsf) as the 2020 LRDP Update, and thus, would emit the same overall GHG emissions during construction and long-term operation. Construction and operational emissions would be generated at the offsite locations selected to accommodate development. These emissions would be spread among the various locations but would amount to approximately the same amount of emissions. (Similar impact)

Hazards and Hazardous Materials

Under the Offsite Housing and Offices Alternative and the 2020 LRDP Update, off-campus and on-campus construction activities, respectively, would entail the transport, use, and storage of hazardous materials and potential release of hazardous materials. In addition, disruption of area roadways during construction may hinder traffic flow and affect emergency response. However, required traffic control plans and feasible mitigation measures are available to reduce these impacts to a less-than-significant level. The types of hazards and hazardous materials impacts described for the Offsite Housing and Offices Alternative would be of similar type and magnitude as the 2020 LRDP Update. Offsite development for the proposed housing component and a portion of the administrative, education, and community serving space would be subject to the same regulations and mitigation as under the 2020 LRDP Update. (Similar impact)

Hydrology and Water Quality

Earth-moving activities associated with construction under the 2020 LRDP Update and the Offsite Housing and Offices Alternative have the potential to affect hydrology and water quality in the area. The types of impacts that could occur from development under the 2020 LRDP Update include adverse effects on water quality, reduced groundwater recharge, and alterations to existing drainage systems. Existing regulations and permitting requirement, such as NPDES permit conditions and an SWPPP, would reduce potentially significant impacts to a less-than-significant level. Similarly, under the Offsite Housing and Offices Alternative, development of additional on-campus structures and facilities and potentially off-campus structures and facilities would be required to comply with existing regulations same as the 2010 LRDP. A similar level of development would occur under the Offsite Housing and Offices Alternative compared to the 2010 LRDP, just at potential offsite locations for the proposed housing component and a portion of the administrative, education, and community serving space. Impacts under the Offsite Housing and Offices Alternative would, therefore, be less than significant and similar to the 2010 LRDP. (Similar impact)

Land Use and Planning

Under the Offsite Housing and Offices Alternative, there would be changes to the existing campus land use pattern and housing would not be incorporated. The Offsite Housing and Offices Alternative would result in acquiring additional property or leasing property offsite. The 2020 LRDP Update's proposed housing component and a portion of the administrative, education, and community serving space would be located offsite where land use controls would be under the City's jurisdiction, and would need to be consistent with the City's General Plan and Zoning Ordinance. Development along the campus periphery, where potential land use conflicts may occur, would be similar to the 2020 LRDP Update. As a result, the potential for land use conflicts would be similar to the 2020 LRDP Update and less than significant. (Similar impact)

Noise

The types of air quality impacts under the Offsite Housing and Offices Alternative would be similar to those described for the 2020 LRDP Update but would potentially be of a lesser magnitude on and around certain areas of the Campus, but these impacts would be transferred to offsite locations. Since the Offsite Housing and Offices Alternative would result in some onsite construction noise and vibration effects being relocated to offsite locations, receptors located around these areas may be exposed to less construction noise and vibration, and potentially less severe operational noise

effects. However, much of the future proposed development would still occur on campus as planned in the 2020 LRDP Update, and receptors in the Campus vicinity would still be exposed to significant noise and vibration impacts. In addition, the relocation of a portion of development off the Sacramento Campus may result in new or different receptors being exposed to construction noise and vibration effects or operational noise impacts, as were identified in the 2020 LRDP Update for receptors located near the Campus. Even though this alternative involves a similar overall level of development, and even though some development would occur at locations off Campus, impacts would be of similar type and magnitude. (Similar impact)

Population and Housing

The project would result in a less than significant impact relative to population because it would increase the total regional population by a small amount. The Offsite Housing and Offices Alternative would increase the regional population by the same amount, and its impact would also be less than significant. The Offsite Housing and Offices Alternative would, however, provide housing and a portion of the administrative, education, and community serving space off-campus at vacant or existing buildings. This alternative is not anticipated to displace additional people or housing compared to the 2020 LRDP Update. As with the 2020 LRDP Update, there would be a direct increase in city residential population. Population and housing impacts under the Offsite Housing and Offices Alternative would be less than significant. (Similar impact)

Public Services

The Offsite Housing and Offices Alternative would result in similar public services needs but at different locations than the 2020 LRDP Update because the proposed housing and a portion of the administrative, education, and community serving space would be offsite at existing vacant or retrofit office or retail buildings. Impacts to public services under the Offsite Housing and Offices Alternative would be similar to the 2020 LRDP Update. (Similar impact)

Recreation

The Offsite Housing and Offices Alternative would not increase the population any more than the 2020 LRDP Update. Park users would likely use parks closer to the offsite housing and office locations, but because the population increase would be modest, it is unlikely that new facilities would be required. As with 2020 LRDP Update, the impact on recreational facilities would be less than significant and of a similar magnitude. As with the 2020 LRDP Update, no recreational facilities would be constructed under the Offsite Housing and Offices Alternative. (Similar impact)

Transportation and Circulation

The Offsite Housing and Offices Alternative entails the same amount of construction, but the residential development would be located offsite. This would reduce traffic impacts to the Sacramento Campus and surrounding neighborhoods because there would be fewer trips associated with residents. However, it is anticipated that residents living offsite would still travel to the Sacramento Campus to utilize the educational and research opportunities that would still be provided on campus. Commutes could be longer, and VMT and transit impacts could increase under this alternative compared to the 2020 LRDP Update. Transit and other impacts are anticipated to be similar as those described under the 2020 LRDP Update. Overall, it is anticipated that impacts would be similar to the Project. (Similar impact)

Utilities and Service Systems

Under the Offsite Housing and Offices Alternative, a similar level of development would occur, just at offsite locations for the proposed housing component and a portion of the administrative, education, and community serving space. It is anticipated that the same service providers would be used (i.e., the City of Sacramento for wastewater and the UC Davis landfill for solid waste). The same amount of water would be required, and the same amount of wastewater, stormwater, and solid waste would be generated. Therefore, impacts would be less than significant under the Offsite Housing and Offices Alternative. (Similar impact)

6.6 Comparison of Alternatives

Table 6-1 summarizes the environmental analyses provided above for the 2020 LRDP Update.

Table 6-1. Comparison of the Environmental Impacts in Relation to the Project

Environmental Topic	2020 LRDP Update	Alternative 1 No Project	Alternative 2 Reduced Development Program	Alternative 3 Alternative Land Use Plan	Alternative 4 Offsite Housing and Offices
Aesthetics	LTS/M	=	<	>	=
Air Quality	SU	<	<	>	<
Biological Resources	LTS/M	<	<	<	=
Cultural Resources	SU	<	<	=	<
Energy	LTS	<	<	=	=
Geology, Soils, Seismicity	LTS/M	<	=	=	=
Greenhouse Gases	LTS/M	<	<	=	=
Hazards and Hazardous Materials	LTS/M	<	=	=	=
Hydrology and Water Quality	LTS/M	<	=	=	=
Land Use and Planning	LTS	<	<	=	=
Noise	SU	<	<	=	=
Population and Housing	LTS	<	<	=	=
Public Services	LTS	=	<	=	=
Recreation	LTS	<	<	=	=
Transportation and Circulation	SU	<	<	=	=
Utilities and Service Systems	LTS	<	<	=	=

Impact Status:

LTS = less-than-significant impact.

LTS/M = LTS with mitigation.

SU = Significant and Unavoidable.

= – Impacts would be similar to those of the project.

< – Impacts would be less than those of the project.

< – Impacts would be greater than those of the project.

6.7 Environmentally Superior Alternative

The State CEQA Guidelines section 15126.6 states that an EIR should identify the “environmentally superior” alternative. “If the environmentally superior alternative is the ‘no project’ alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.” As shown in the Executive Summary Chapter of this volume of the EIR, there would be significant and unavoidable impacts associated with the project. These impacts are related to air quality, historic resources, biological resources, noise, and transportation. Each of the evaluated alternatives would result in lesser environmental impacts than the 2020 LRDP Update to some environmental resources. Under the No Project Alternative, new residential housing, community serving uses, and expansion of the education core would not occur to the extent proposed in the 2020 LRDP Update. Therefore, the No Project Alternative would not achieve several of the identified project objectives. These include facilitating growth in student enrollment through on-campus housing and expanded education facilities, community engagement and community well-being through community serving uses and expanded community partnerships and addressing the projected increased need for health care professionals and workforce development through educational initiatives.

Under the Reduced Development Program Alternative, impacts on aesthetics, traffic, noise, and air quality would be reduced; however, a reduction in planned development would not achieve several project objectives. These include keeping pace with the increased demand for community health care, expanding teaching, education and research missions, and facilitating enrollment growth to meet the increased need for health care professionals. In addition, a reduced development program would limit the ability to provide state-of-the-art facilities that support research, workforce development, and education initiatives to support a healthy local economy through an increase in and access to jobs.

Under the Alternative Land Use Plan Alternative, siting the Aggie Square Phase I project further from the Sacramento Language Academy would still result in traffic impacts, but they would be concentrated further north on Stockton, and toward V Street. It would also be inefficient to locate this project within the Hospital land use designation. The 2020 LRDP seeks to combine like structures and land uses to improve campus efficiency.

The Offsite Housing and Offices Alternative would result in reduced impacts on air quality but would not meet several of the identified project objectives. Interaction and collaboration among all the varied uses comprising the health care campus community would be more difficult if those varied uses are dispersed away from the campus. In addition, locating housing away from campus would remove a population that would energize the community serving uses proposed as part of the 2020 LRDP Update.

Each of the alternatives considered would result in long-term, significant and unavoidable environmental impacts. As described above and shown in Table 6-1, the Reduced Development Alternative would result in greater impact reductions compared to the other alternatives due to the overall reduction in development, which would reduce building square footage and the on-site daily population. Therefore, the Reduced Development Program Alternative is considered environmentally superior to the Alternative Land Use Plan Alternative and the Offsite Housing and Offices Alternative. However, while this alternative would have lesser impacts than the proposed project, it would not provide the amount of infrastructure needed to facilitate the continued growth of the research and collaboration efforts of the Sacramento Campus. There would be fewer employment and partnership opportunities with less building space. The Reduced Development

Program Alternative would provide less opportunity for growth in workforce development and lifelong learning.

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7.1.1 University of California, Davis

- Matt Dulcich, Director of Environmental Planning
- Heather Davis, Environmental Planner
- Alex Tremblay, Assistant Environmental Planner
- Brian Harrington, Associate Director, UC Office of the President
- Ha Ly, Planning Specialist, UC Office of the President

7.1.2 ICF

- Shahira Ashkar, Project Director
- Lindsay Christensen, Project Manager
- Erin Gustafson, AICP, Project Coordinator
- Chris Burrows, Environmental Planner
- Terry Rivasplata, Expert Consultant
- Stephanie Monzon, Senior Editor
- Sara Wilson, Senior Editor
- Lisa Daugherty, Editor
- Jody Job, Publications Specialist
- Alex Angier, GIS Analyst
- Dan Schiff, GIS Analyst
- Alan Barnard, Graphic Artist
- Donna McCormick, Visual Resources Specialist
- Laura Yoon, Air Quality and Climate Change Specialist
- Sandy Lin, AICP, Air Quality and Climate Change Specialist
- Darren Trageser, Air Quality Specialist
- Edward Carr, Air Quality Specialist
- Angela Alcala, Biologist
- Lisa Webber, Botanist
- Barbara Wolf, Senior Environmental Planner

- Christiaan Havelaar, Archaeologist
- Erik Allen, Archaeologist
- David Lemon, Historian
- Katrina Sukola, Environmental Scientist
- Dave Buehler, Noise Specialist
- Elizabeth Scott Foley, Noise Specialist
- Joe Bashore, Environmental Planner
- Kelsey Cowin, Environmental Planner
- Tina Sorvari, Senior Environmental Planner

7.1.3 Analytical Environmental Services

- Sally Zeff, AICP, Project Director

7.1.4 Fehr & Peers

- David Carter, AICP, Senior Associate
- Greg Behrens, AICP, Associate
- Rob Hananouchi, AICP, Associate
- David Manciatì, Transportation Engineer

8.0 Executive Summary

None

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8.7 Chapter 7, Preparers and Persons Consulted

None

Chapter 9

Acronyms and Abbreviations

Term	Description
°C	degrees Celsius
°F	degrees Fahrenheit
2017 Scoping Plan	<i>California's 2017 Climate Change Scoping Plan</i>
2018 Progress Report	<i>2018 Progress Report California's Sustainable Communities and Climate Protection Act</i>
2020 LRDP Update	Sacramento Campus 2020 Long Range Development Plan Update
AB	Assembly Bill
ABS	acrylonitrile butadiene styrene
ACM	asbestos containing materials
AC	air conditioner
ADT	average daily traffic
AFV	alternative fuel vehicle
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act of 1972
AQMP	Air Quality Mitigation Plan
AREAPOLY	area source
ASB	Administrative Support Building
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ATC	Authority to Construct
AV	automated vehicle
BACT	best available control technologies
Basin Plan	<i>Water Quality Control Plan for the Sacramento River Basin and The San Joaquin River Basin</i>
basin plans	water quality control plans
BMP	best management practice
BPIP PRIME	Building Profile Input Program, PRIME
Business 80	Capital City Freeway
CAA	Clean Air Act
CAAQS	California ambient air quality standards
CAFÉ	Corporate Average Fuel Economy Standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal. Code Regs.	California Code of Regulations
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
Cal-EPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
Cal-OSHA	California Division of Occupational Safety and Health
CalRecycle	California Department of Resources Recycling and Recovery

Term	Description
Caltrans	California Department of Transportation
CAP	<i>2009–2010 Climate Action Plan</i>
Capital City Freeway	Interstate 80 Business Loop
CAR	Climate Action Reserve
CARB	California Air Resources Board
Carl Moyer Program	Carl Moyer Memorial Air Quality Standards Attainment Program
CASGEM	California Statewide Groundwater Elevation Monitoring
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCSP	Central City Specific Plan
CDC	U.S. Centers for Disease Control and Prevention
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEC	California Energy Commission
Central Energy Plant	Central Cogeneration Plant
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	California Fire Code
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH ₄	methane
CHBC	California State Historic Building Code
City	City of Sacramento
CIWMA	California Integrated Waste Management Act
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent
Construction General Permit	NPDES General Permit for Construction Activities
COVID-19	coronavirus disease 2019
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CUPA	certified uniform program agency
CV	Connected vehicles
CWA	Clean Water Act
CWTP	Combined Wastewater Treatment Plant
dB	decibel
DNA	deoxyribonucleic acid

Term	Description
DOF	California Department of Finance
DPM	diesel particulate matter
DSH	diameter measured at standard height
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EAP	<i>Energy Action Plan</i>
East Wing	East Main Hospital Wing
EDF	Environmental Defense Fund
EHS	Environmental Health and Safety
EIR	environmental impact report
EMD	Environmental Management Department
EMFAC2017	EMission FACTor model
EO	Executive Order
EOP	Emergency Operations Plan
EPA	U.S. Environmental Protection Agency
EPAct	Energy Policy Act of 1992
ERCs	emission reduction credits
ESA	federal Endangered Species Act
EV	electric vehicle
Fed. Reg.	<i>Federal Register</i>
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
FOCA	Federal Office of Civil Aviation
Friant Ranch Decision	California Supreme Court's decision in <i>Sierra Club v. County of Fresno</i> (6 Cal. 5th 502)
Friant Ranch Project	<i>Community Plan Update and Friant Ranch Specific Plan</i>
FSB	Fleet Services Building
FSSB	Facilities Support Services Building
FTA	Federal Transit Administration
GHG	greenhouse gas
gpm	gallons per minute
GSA	Groundwater Sustainability Agencies
gsf	gross square feet
GSP	groundwater sustainability plan
Guidelines	<i>Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings</i>
GVWR	gross vehicle weight rating
GWP	global warming potential
HAP	hazardous air pollutant
HFC	hydrofluorocarbons
HI	hazard index
HMBP	hazardous materials business plan

Term	Description
HMMP	hazardous materials management plan
HPI	Healthy Places Index
HPMS	Highway Performance Monitory Systems
HRA	health risk assessment
HSWA	Hazardous and Solid Waste Amendments of 1984
HVA	hazard vulnerability analysis
HWCF	Hazardous Waste Collection Facility
I-	Interstate
I-5	Interstate 5
I-80	Interstate 80
IEPR	<i>Integrated Energy Policy Report</i>
Interim Guidance	<i>Local Development – Intergovernmental Review Program Interim Guidance</i>
IPaC	Information, Planning, and Conservation System
IPCC	Intergovernmental Panel on Climate Change
K	kindergarten
kBtu	kiloBTU
KVP	key viewpoint
kW	kilowatt
kWh	kilowatt hours
lbs/hr	pounds per hour
L_{dn}	day-night sound level
LED	light-emitting diode
LEED	Leadership in Energy and Environmental Design
L_{eq}	equivalent sound level
LINEAREA	line/area source
LLL	Lifelong Learning
L_{max}	maximum sound levels
L_{min}	minimum sound levels
LOS	level-of-service
LRDP	Long Range Development Plan
LSTE	Life Science Technology Engineering
LTO	landing and takeoff
LTSE	Life Science Technology Engineering
LUST	leaking underground storage tank
L_{xx}	percentile-exceeded sound levels
MBH	British thermal units per hour
MBTA	Migratory Bird Treaty Act
MERV	Minimum Efficiency Reporting Value
mgd	million gallons per day
MLD	Most Likely Descendant
MMI	Modified Mercalli Intensity
MMRP	Mitigation Monitoring and Reporting Program

Term	Description
mph	miles per hour
MPO	metropolitan planning organization
MRI	Magnetic Resonance Imaging
MS4	Municipal Separate Storm Sewer Systems
MTIP	Metropolitan Transportation Improvement Program
MTP/SCS	<i>Metropolitan Transportation Plan/Sustainable Communities Strategy</i>
MW	megawatts
MWh	megawatt-hour
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEC	No Exposure Certification
NEHRP	National Earthquake Hazards Reduction Program
NEL	narrative effluent limitation
NESHAP	National Emission Standard for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act of 1966
NHSTA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO ₂	nitrogen dioxide
NOA	naturally occurring asbestos
NOI	notice of intent
NOP	Notice of Preparation
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OAP	Ozone Attainment Plan
OEHHA	California Office of Environmental Health Hazard Assessment
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
P3	public private partnership
PCB	polychlorinated biphenyl
PFC	perfluorocarbons
PG&E	Pacific Gas and Electric Company
P _{ga}	peak ground acceleration
PHB	pedestrian hybrid beacon
PhDF	<i>UC Davis Sacramento Campus Physical Design Framework</i>
PO&M	Plant Operations and Maintenance

Term	Description
POINT	point sources
polychlorinated biphenyl	PCBs
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PPV	maximum instantaneous peak of the vibration signal in inches per second
PRC	Public Resources Code
project	University of California, Davis Sacramento Campus 2020 Long Range Development Plan Update
proposed species	listed or proposed for listing as threatened or endangered under ESA (50 Code of Federal Regulations 17.12 [listed plants] and various notices in the Federal Register)
PS4	Parking Structure 4
PS6	Parking Structure 6
PTO	Permit to Operate
PVC	polyvinyl chloride
R&D	research and development
RCRA	Resource Conservation and Recovery Act
RCx	retrocommissioning
RD	Reclamation District
Regional San	Sacramento Regional County Sanitation District
Regional Water Boards	Regional Water Quality Control Boards
RMP	risk management plan
ROG	reactive organic gases
RPS	renewable portfolio standard
RTP	Regional Transportation Plan
SACOG	Sacramento Area Council of Governments
Sacramento Regional OAP	<i>2017 Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan</i>
SacRT	Sacramento Regional Transit District
SAF Plan	<i>State Alternative Fuels Plan</i>
SAFCA	Sacramento Area Flood Control Agency
SAFE	Safer Affordable Fuel-Efficient
SB	Senate Bill
SCGA	Sacramento Central Groundwater Authority
SCI	Sacramento Center for Innovation
Scoping Plan	<i>2017 Climate Change Scoping Plan</i>
SCS	sustainable communities strategy
SCUSD	Sacramento City Unified School District
Secretary's Standards	Secretary of the Interior's Standards for the Treatment of Historic Properties
SEL	Single Event Level
SEL	Sound Equivalent Level
sf	square feet
SF ₆	sulfur hexafluoride

Term	Description
SFD	City of Sacramento Fire Department
SFNA	Sacramento Federal Nonattainment Area
SGMA	Sustainable Groundwater Management Act of 2014
SHS	State Highway System
SIP	State Implementation Plan
SJUSD	San Juan Unified School District
SJVAB	San Joaquin Valley Air Basin
SLCP	Short-Lived Climate Pollutants
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMAQMD's CEQA Guide	<i>Guide to Air Quality Assessment in Sacramento County</i>
SMUD	Sacramento Municipal Utility District
SOIS	Secretary of the Interior's Standards
SO ₂	sulfur dioxide
Sound Transmission Class	STC
SOV	single-occupant vehicle
SPCC	spill prevention, control, and countermeasures
SPD	City of Sacramento Police Department
SQIP	Stormwater Quality Improvement Program
SR 99	State Route 99
SRWTP	Sacramento Regional Wastewater Treatment Plant
SSURGO	Soil Survey Geographic Database
State Water Board	State Water Resources Control Board
STC	Sound Transmission Class
STEM	science, technology, engineering, and mathematics
Supplemental EIR	supplemental environmental impact report
SVAB	Sacramento Valley Air Basin
SWMP	stormwater management plan
SWPPP	storm water pollution protection plan
T&D	transmission and distribution
TAC	toxic air contaminant
TCR	the Climate Registry
TDM	transportation demand management
Technical Advisory	<i>Technical Advisory on Evaluating Transportation Impacts in CEQA</i>
The Regents	Board of Regents of the University of California
TISG	<i>Transportation Impact Study Guide</i>
TMDL	total maximum daily load
TMP	Traffic Management Plan
TPA	transit priority area
TSDF	treatment, storage, and disposal facility
UC	University of California
UC Davis	University of California, Davis
UC Davis EH&S	UC Davis Office of Environmental Health and Safety

Term	Description
UC Sustainable Practices Policy	<i>University of California Policy on Sustainable Practices</i>
UC system	University of California system
UMP	<i>Utility Master Plan</i>
University	University of California
US 50	U.S. Route 50
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGC	US Green Building Council
USGS	U.S. Geological Survey
UST	underground storage tank
Utility Master Plan	<i>University of California, Davis Sacramento Campus, Utility Master Plan Update</i>
UWMP	<i>Urban Water Management Plan</i>
VDEC	Verified Diesel Emissions Control
VMT	vehicle miles traveled
VOC	volatile organic compound