Appendix B
AQ/GHG/Energy Technical Memorandum

MEMORANDUM

To:	Michael Haberkorn, Gatzke Dillon & Ballance LLP
From:	Sarah Halterman, Air Quality Specialist, Dudek
Subject:	SDSU Imperial Valley Campus Brawley Sciences Building Project Air Quality, Greenhouse Gas Emissions, and Energy Technical Memo
Date:	August 25, 2023
cc:	Sarah Lozano, Alexandra Martini, Dudek
Attachment(s):	Attachment A – Figures Attachment B - Air Quality and Greenhouse Gas Emissions CalEEMod Output Files

Dudek has conducted an evaluation to determine potential impacts related to air quality, greenhouse gas (GHG) emissions, and energy associated with the proposed California State University (CSU) San Diego State University (SDSU) Brawley Sciences Building Project (project or proposed project), located in Imperial County, California.

This assessment uses the significance thresholds in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.) and, while CSU as a state agency is not subject to local or regional planning regulations, is based on the emissions-based significance thresholds recommended by the Imperial County Air Pollution Control District (ICAPCD) and other applicable thresholds of significance.

The certified 2003 SDSU Imperial Valley Master Plan Project environmental impact report (EIR) analyzed the air quality impacts associated with development of a Campus Master Plan at the Brawley site at a program level of review. This technical memo presents an analysis of potential impacts associated with construction and operation of the proposed sciences building at a project-specific level of review, evaluating the potential for project-generated construction and operational criteria air pollutant emissions to exceed established state and federal ambient air quality standards, result in adverse health impacts on sensitive receptors, or conflict with the implementation of applicable air quality management plans. The technical memo also evaluates if implementation of the proposed project would result in GHG emissions that would have a significant impact on the environment or if the project would conflict with applicable plans, policies, or regulations for the purpose of reducing GHG emissions. Finally, the technical memo evaluates if implementation of the project would result in wasteful, inefficient, or unnecessary consumption of energy, or conflict with plans for renewable energy or energy efficiency.

As described below, this technical memo concludes that the proposed project would result in less than significant impacts related to air quality, GHG emissions, and energy use.

1 Project Location and Setting

The project is located at 560 California State Route (SR) 78 (also referred to as Ben Hulse Highway) in Imperial County, east of the city of Brawley. Regional access to the campus is provided by SR 111 and SR 86 to the west and northwest, respectively, and SR 115 to the east (See Attachment A: Figure 1). The proposed project site is surrounded by agricultural uses to the north, south, and west. Undeveloped land and a solar farm are located directly east of the proposed project site. The proposed sciences building would be constructed northeast of existing campus Building 101, and the associated parking lot. Project construction staging areas would occupy the area of campus located southeast of the site and north of SR 78 (See Attachment A: Figure 2).

2 Project Description

In September 2003, CSU certified an environmental impact report (EIR) and approved a Campus Master Plan for development of the SDSU Off-Campus Brawley Center (Brawley Center), which would serve as an extension of the existing SDSU Imperial Valley Campus (IVC) located in Imperial County. The IVC is an extension of SDSU's main campus located in San Diego and furthers the university's regional educational mission to provide additional educational opportunities to the outlying communities of Imperial County. The approved Campus Master Plan and certified EIR provided sufficient environmental analysis and authorization necessary for enrollment of up to 850 full-time equivalent (FTE) students and corresponding faculty and staff, and a framework for development of the facilities necessary to serve the approved campus enrollment.

The Brawley Center is approximately 200 acres in size and is located east of the city of Brawley (city). Currently, the Brawley Center has been partially built out with educational and support facilities, although much of the campus remains undeveloped or used for active agriculture. As noted above, the environmental impacts associated with development of the Brawley campus, including a student enrollment up to 850 FTE, were evaluated at a program level of review in the previously certified SDSU Imperial Valley Campus Master Plan Project EIR (2003 EIR) (SCH 200251010). In CSU's effort to build out the IVC consistent with the previously approved Campus Master Plan, SDSU now proposes construction and operation of a sciences building that would be located on the Brawley campus.

The proposed project involves the construction and operation of a sciences building (science, technology, engineering, and mathematics) that would house teaching labs, lecture spaces, faculty/administration offices, research spaces, and conference rooms, as well as mechanical, electrical, and telecom support spaces. The proposed project does not include/propose any increase in the previously authorized and approved maximum student enrollment of 850 FTE.

The proposed project site is approximately 3.2-acres in size, including hardscape and landscape improvements; and the construction staging areas would occupy approximately 1 acre in the area of campus located southeast of the site and north of SR-78. The project includes 61,119 sf of on-site landscaping, including the construction of bio-retention areas to capture stormwater runoff from stormwater drainages systems that will be located throughout the project site. Hardscape improvements will include 41,297 sf of sidewalks and pedestrian walkways, which will connect the project site to existing campus buildings and parking lot.

Additionally, the project will require new points of connection to domestic water, fire water, and sewer lines from existing utility lines to serve the new building, as well as new domestic water line infrastructure. Potable water will be provided by the city of Brawley, as well as sewer and wastewater collection services. New utility infrastructure will also be required to support electrical services for the building, as well as a back-up diesel operated generator. Additionally, the project would introduce 54 kilowatts (kW) of on-site solar.

The proposed project building would have an area of 36,900 gross sf and would be approximately 35 feet in height. The project is projected to be built over the course of 19 months, with construction estimated to begin in January 2024.Construction and equipment staging would require 1-acre of space within the campus, directly east of the existing building (Building 101) and parking lot. The project would involve site preparation, grading, and excavation associated with project construction. Excavation depths are anticipated to be 2 to 5 feet. Waste (i.e., excavated gravel/soil) generated during project construction would be balanced within the site.

3 Analysis Methodology

The project Site is located within the Salton Sea Air Basin (SSAB) and is within the jurisdictional boundaries of the Imperial County Air Pollution Control District (ICAPCD), which has jurisdiction over the central portion of Riverside County (Coachella Valley) and all of Imperial County, where the proposed project is located. The California Emissions Estimator Model (CalEEMod) Version 2022.1.1.1818 was used to estimate emissions from construction and operation of the proposed project (California Air Pollution Control Officers Association [CAPCOA] 2023). CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant and GHG emissions associated with construction activities and operation of a variety of land use projects, such as residential, commercial, and industrial facilities. CalEEMod input parameters, including the land use type used to represent the project and its size, construction schedule, and anticipated use of construction equipment, were based on information provided by the applicant or default model parameters if project specifics were unavailable. Based on the proposed project schedule, construction would commence in January 2024 and last approximately 19 months. The first full year of the proposed project's operation would be 2026, after completion of construction.

The analysis presented here considers the potential environmental impacts of the proposed project relative to existing conditions. Establishment of the project site's existing air quality, GHG emissions, and energy conditions and assessment of project-attributed environmental air quality, GHG emissions, and energy impacts has been prepared using information contained in the previously certified 2003 EIR, with the information updated, as necessary, to reflect specific conditions of the proposed project.

At the time the EIR for the SDSU Imperial Valley Campus Master Plan Project was certified in 2003, an evaluation of GHG emissions and energy was not required under CEQA. Since that time, California's legal landscape has changed relative to the consideration of GHG emissions and energy under CEQA via the enactment of numerous statutory schemes, the promulgation of implementing regulations, the issuance of executive orders and planning documents at the state, regional and local levels, and the publication of relevant judicial decisions. While CEQA now requires evaluation of potential GHG emission and energy impacts of a project, based on the *Citizens for Responsible Equitable Environmental Development v. City of San Diego* (2011) decision and other published case law, information about the effects of GHG emissions and energy is not "new information" triggering a requirement to prepare a subsequent or supplemental EIR under CEQA Guidelines Section 15162(a)(3).

However, as this proposed project is being considered under the umbrella of the 2003 EIR, this environmental analysis also has considered the relevance of CEQA Guidelines Section 15168(c)(1), which addresses the use of program EIRs for purposes of streamlining the environmental review of implementing projects. Under that provision, "[i]f a later activity would have effects that were not examined in the program EIR, a new initial study would need to be prepared leading to either an EIR or a negative declaration." Therefore, pursuant to CEQA Guidelines Section 15168(c)(1), an analysis of the proposed project's GHG emissions and energy has been prepared, as described in Sections 5 and 6 below.

The 2003 EIR adequately analyzed the potential air quality impacts associated with development of a Campus Master Plan with an enrollment of 850 full-time equivalent (FTE) students. Because the proposed project would not result in an increase in student enrollment above the approved enrollment number, the air quality analysis presented here is limited to the specific impacts associated with construction and operation of the proposed sciences building.

4 Air Quality Assessment

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. Criteria air pollutants that are evaluated include reactive organic gases (ROGs), oxides of nitrogen (NOx), carbon monoxide (CO), sulfur oxides (SOx), particulate matter with an aerodynamic diameter less than or equal to 10 microns in size (coarse particulate matter, or PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns in size (fine particulate matter, or $PM_{2.5}$). ROGs and NOx are important because they are precursors to ozone (O_3).

Criteria air pollutant emissions associated with construction of the proposed project were estimated for the following emission sources: operation of off-road construction equipment, architectural coating, on-road vendor (material delivery) trucks, and worker vehicles. The operational criteria air pollutant emissions were estimated from area sources, energy sources, and stationary sources. As stated in Section 2, Project Description, the project does not include nor propose any increase in the previously authorized and approved maximum student enrollment of 850 FTE. Because the proposed project FTE student enrollment is consistent with the FTE parameter used in the 2003 EIR analysis, CEQA does not require that operational emissions related to mobile sources be included in the project-level analysis herein. Therefore, air quality impacts analyzed herein are focused on those that would result from construction and operation of the proposed sciences building envelope / site footprint.

4.1 Air Quality Impact Analysis and Conclusions

4.1.1 Thresholds of Significance

The significance criteria used to evaluate the project impacts to air quality are based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this air quality analysis, a significant impact would occur if the project would (14 CCR 15000 et seq.):

a) Conflict with or obstruct implementation of the applicable air quality plan?
b) Result in a cumulatively considerable new increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?
c) Expose sensitive receptors to substantial pollutant concentrations?
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to determine whether a project would have a significant impact on air quality.

The ICAPCD has established numeric significance thresholds to assist lead agencies in determining whether a proposed project may have a significant air quality impact. A project would result in a substantial contribution to an existing air quality violation of the NAAQS or CAAQS for O_3, which is a nonattainment pollutant, if the project's construction or operational emissions would exceed ICAPCD's ROG or NOx significance thresholds. These emissions-based thresholds for O_3 precursors are intended to serve as a surrogate for an "ozone significance threshold" (i.e., the potential for adverse O_3 impacts to occur) because O_3 itself is not emitted directly, and the effects of an individual project's emissions of O_3 precursors (ROG and NO_x) on O_3 levels in ambient air cannot be determined through air quality models or other quantitative methods. The SSAB is also designated as nonattainment for the federal and state PM_{10} standards and designated as unclassified or in attainment for all other criteria air pollutants.

The 2017 ICAPCD CEQA Handbook provides guidelines and numeric thresholds for determining the significance of project impacts and the recommended level of environmental analysis required based on total anticipated emissions from project operations. These guidelines are provided in Table 1 below and are organized by Tier I and Tier II projects. Per the ICAPCD CEQA Handbook, projects whose operational emissions are below Tier I thresholds are not required to develop a Comprehensive Air Quality Analysis Report or an Environmental Impact Report (EIR), and can rely on an Initial Study to determine that impacts are less than significant. As discussed in Section 4.1.2 below, the proposed project is considered a Tier I project per ICAPCD guidelines.

Table 1. ICAPCD Air Quality Significance Thresholds

Pollutant	Emissions (pounds per day)		
	Operational		Construction
	Tier 1	Tier II	
ROGs	< 137	137 and greater	75
NO_x	< 137	137 and greater	100
CO	< 550	550 and greater	550
SO_x	< 150	150 and greater	-
PM_{10}	< 150	150 and greater	150
$PM_{2.5}$	< 550	550 and greater	—
Level of Significance	Less Than Significant	Significant Impact	N/A
Level of Analysis	Initial Study	Comprehensive Air Quality Analysis Report	N/A
Environmental Document	Negative Declaration	Mitigated ND or EIR	N/A

Source: ICAPCD 2017.
Notes: ICAPCD = Imperial County Air Pollution Control District; ROGs = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; N/A = not applicable; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.

Thresholds of significance for project construction are also provided in Table 1. According to ICAPCD CEQA guidance, construction particulate matter impacts for Tier I projects should be qualitative as opposed to quantitative, although it is ultimately at the discretion of Lead Agencies to quantify construction emissions. As described below, the proposed project is below the operational thresholds for Tier I projects, and thus is not required to quantitatively evaluate PM_{10} impacts for construction. However, construction emissions were quantified for disclosure purposes.

Regardless of project size and whether construction emissions are quantified, the ICAPCD requires implementation of standard measures for construction equipment and fugitive PM_{10} at all construction sites. These standard measures are listed below and are collectively known as Regulation VIII- *Fugitive Dust Control Measures* of ICAPCD's Rules and Regulations. The fugitive dust benefits from implementation of these regulatory compliance measures were not included in the CalEEMod emissions modeling given that the measures cannot be reliably quantified. In this case, fugitive dust emissions (PM_{10}) generated during project construction will likely be lower than the estimates reported in Table 3, *Estimated Maximum Daily Construction Criteria Air Pollutant Emissions*, below.

a) All disturbed areas, including Bulk Material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover.
b) All on site and off site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.
c) All unpaved traffic areas one (1) acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emission shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.
d) The transport of Bulk Materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of Bulk Material. In addition, the cargo compartment of all Haul Trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material.
e) All Track-Out or Carry-Out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an Urban area.
f) Movement of Bulk Material handling or transfer shall be stabilized prior to handling or at points of transfer with application of sufficient water, chemical stabilizers or by sheltering or enclosing the operation and transfer line.
g) The construction of any new Unpaved Road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. Any temporary unpaved road shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.

4.1.2 Impact Analysis

The analysis prepared for the 2003 EIR determined that there would be no significant air quality impacts as a result of development of the SDSU Brawley Campus Master Plan. The air quality assessment concluded that there would be no construction related impacts or project-related exceedances for any criteria air pollutants during operation. As such, no air quality related mitigation measures were required or identified in the 2003 EIR. A summary of the prior analysis is provided below along with the current project-specific analysis for each Appendix G significance criteria, as applicable.

Consistent with the 2003 EIR, the impact assessment herein includes analysis of construction-related air quality emissions related to off-road equipment use and material movement specific to construction of the proposed sciences building. As discussed previously, the project would not generate additional students beyond the 850 FTE contemplated in the 2003 EIR. Because the proposed project FTE enrollment would be consistent with the FTE parameter used in the 2003 EIR analysis, no further analysis of operational emissions impacts related to mobile sources is required.

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

The proposed project site is located within the SSAB, which includes all of Imperial County and the central portion of Riverside County (Coachella Valley). Imperial County, where the project is located, is within the jurisdictional boundaries of the ICAPCD. The ICAPCD is responsible for developing and implementing the clean air plans for attainment and maintenance of the NAAQS and CAAQS in the SSAB, including the 2018 PM_{10} State Implementation Plan (SIP) and the 2017 SIP for the 75 ppb 8-hour Ozone Standard.

The previous analysis prepared for the 2003 EIR found that the project would have less-than-significant impacts related to conflicting with implementation of the applicable air quality plan. Given that the proposed project is within the scope of the approved Campus Master Plan and its certified 2003 EIR, that determination remains applicable. However, because the ICAPCD has adopted additional air quality plans since certification of the 2003 EIR, a discussion of the proposed project's potential to conflict with those applicable plans that post-date the certified 2003 EIR is provided below.

The most efficient approach to determining project consistency with applicable air quality plans is assessing if the proposed development is consistent with the growth anticipated by the land use plans that were used for preparation of the air quality plans. The relevant land use plans for the proposed project include the 2003 SDSU Imperial Valley Campus Master Plan and the Imperial County General Plan.

Relatedly, ICAPCD's air quality attainment plans are based, in part, on regional population and employment (and thus vehicle miles traveled [VMT]) growth projections from the Southern California Association of Governments (SCAG), which is the designated Metropolitan Planning Organization (MPO) for Imperial County. Thus, a project's conformance with SCAG's Metropolitan Transportation Plan/Sustainable Communities Strategy 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.

Further, the Imperial County General Plan is the governing land use document for physical development within the county. Projects that propose development consistent with growth anticipated by the current General Plan are considered consistent with the air quality attainment plans. If a project proposes development that is less dense than anticipated within the current General Plan, the project would likewise be consistent with the attainment plans because emissions would be less than estimated within the current General Plan. If a project proposes development that is greater than that anticipated in the General Plan and SCAG's growth projections, the project could be in conflict with the attainment plans, and might have a potentially significant impact on air quality because emissions could exceed those estimated for the existing land use plan (i.e., General Plan).

As discussed in Section 2, Project Description, student enrollment numbers and corresponding faculty and staff relating to the proposed project would be consistent with those analyzed in the previously certified EIR and approved 2003 Campus Master Plan for development of the SDSU Brawley Campus, which itself is included in the County's General Plan land use element[1]. Additionally, the project site is zoned Government/Special Public Zone (G/S), which allows for schools and research and development uses.

Implementation of the proposed project would not result in development in excess of that anticipated in local plans or increases in population growth beyond those contemplated by SCAG. Therefore, given that the proposed project is consistent with the growth projections used to prepare the air quality management plans for the SSAB (2018 PM_{10} and 2017 Ozone SIPs), the project would be consistent with these plans. Impacts related to the potential to conflict with or obstruct implementation of the applicable air quality plans would be **less than significant**.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?

Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and ICAPCD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality.

The air quality analysis prepared for the 2003 EIR found that there would be no significant construction-related air quality impacts and no project-related exceedances or excessive concentrations of any criteria air pollutants per either State or federal standards.

The construction emissions estimate in the 2003 EIR was based on "typical worst day construction activities associated with a school campus construction project similar to the proposed project." The certified 2003 EIR's "typical worst day" equipment-related emissions estimation parameters included use of forklifts, off-highway trucks, tracked loaders, tracked tractor/dozers, scrapers, and rollers. Total equipment hours (i.e., total pieces of equipment x total hours of daily operation per piece) for the "typical worst day" were approximately 68 equipment hours per day. Additionally, the total earthwork quantity used in the 2003 EIR analysis was 10,000 cubic yards (CY) of material over 30 days, or 866 tons per day. As discussed in the project-specific analysis below, the construction equipment and activity anticipated for implementation of the proposed project is within the impact analysis envelope of the certified 2003 EIR.

While the proposed project fits within the impact analysis envelope of the certified 2003 EIR for equipment use and grading, the prior EIR assessment did not estimate emissions associated with off-site worker or vendor trips. Given that emissions from these sources have the potential to result in air quality impacts with construction of the proposed project, an updated project-specific estimate of air quality emissions from proposed project construction is provided.

The operational emissions estimate in the 2003 EIR included emissions from motor vehicles associated with the FTE enrollment of 850 ultimately expected at the Brawley campus. The analysis found that trip

[1] Page 27 of the *Land Use Element* of the *Imperial County General Plan* summarizes schools within the County, and includes reference to the San Diego State University-Imperial Valley Campus in Brawley (Imperial County 2015). The campus boundary (which encompasses the project site) is also included on the Imperial County Land Use Plan Map as a Community Facility (College) (Imperial County 2007).

generation associated with this increase in FTE would result in no exceedances of ICAPCD threshold levels for all criteria air pollutants. Given that the proposed project would not increase the previously approved maximum FTE enrollment, the proposed project is consistent with the 850 previously analyzed in the certified 2003 EIR, and the proposed project's impacts related to operational mobile emissions would remain consistent with the less than significant finding of the previous analysis. As such, the proposed project analysis presented herein will focus on operational emissions related to the building envelope and site footprint (e.g., energy, area sources).

The project-specific analysis for air quality impacts is discussed separately for construction and operation below.

Construction Emissions

Proposed construction activities would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and ROG off-gassing) and off-site sources (i.e., on-road vendor trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day, depending on the level of activity; the specific type of operation; and, for particulate matter, the prevailing weather conditions. Therefore, such emission levels can only be approximately estimated.

Internal combustion engines used by construction equipment, trucks, and worker vehicles would result in emissions of ROGs, NOx, CO, PM_{10}, and $PM_{2.5}$. Additionally, PM_{10} and $PM_{2.5}$ emissions would be generated by entrained dust, which results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil. As discussed in Section 4.1.1 above, the proposed project would be required to comply with ICAPCD Rule VIII to control dust emissions generated during any dust-generating activities. Standard construction measures that would be employed to reduce fugitive dust emissions include limiting visible emissions to no greater than 20% opacity through use of chemical stabilizers, dust suppressants and/or watering. Based on the developed nature of the project site and surrounding areas, and given that on-site and off-site roads would be paved, the default percentage of paved road was adjusted to more accurately represent on-road travel during construction of the proposed project. To account for potential unpaved vehicle movement within the project site vicinity, it was conservatively estimated that 95% of all travel (i.e., worker and vendor trips) would be on paved roads, with 5% on unpaved roads.

CalEEMod Version 2022.1.1.18 was used to estimate emissions from construction of the proposed project. CalEEMod default construction parameters were used when detailed project-specific information was not available, including specific off-road equipment for each phase. The construction equipment needed to build out the proposed project is similar to that analyzed in the 2003 EIR analysis, and would include forklifts, tractors/loaders/backhoes, graders, and dozers. Maximum daily activity would require approximately 50 equipment hours per day, which is well within the scope of the 68 hours analyzed for the "typical worst day" in the 2003 EIR.

According to preliminary project detail, the material movement estimated for construction of the proposed project is 7,500 CY of cut to be balanced on site, which also is within the scope of the previously identified 10,000 CY analyzed in the 2003 EIR. Additional detail on project-specific construction parameters is included in Attachment B.

Table 3 presents the estimated maximum daily construction emissions generated during construction of the proposed project. Details of the emission calculations are provided in Attachment B.

Table 3. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Year	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	pounds per day					
2024	1.71	16.21	16.25	0.02	26.22	3.43
2025	24.59	9.29	11.95	0.02	26.18	2.92
Maximum	24.59	16.21	16.25	0.02	26.22	3.43
ICAPCD Threshold	*75*	*100*	*550*	—	*150*	—
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ICAPCD = Imperial County Air Pollution Control District.
See Attachment B for complete results.

As shown in Table 3, proposed project construction would not exceed ICAPCD's daily thresholds. Therefore, construction impacts associated with criteria air pollutant emissions would be **less than significant.**

Operational Emissions

Criteria air pollutant emissions from daily operation of the proposed project were estimated using CalEEMod Version 2022.1.1.18 using a combination of CalEEMod default parameters and project-specific information provided by the applicant, where available. Operational year 2026 was analyzed as it is anticipated to be the first full year of operation following completion of project construction. Criteria air pollutant emissions sources and associated information are discussed below. As discussed previously, mobile sources associated with the Campus Master Plan's FTE enrollment level were previously analyzed in the certified 2003 EIR. Because the proposed project would not increase FTE enrollment beyond the approved Campus Master Plan level, emissions from the proposed project's mobile trips would be consistent with the less than significant impact determination of the 2003 EIR and are not included in the operational analyses.

Area Sources

CalEEMod was used to estimate operational emissions from area sources, including emissions from consumer product use, architectural coatings, and landscape maintenance equipment.

Consumer products are chemically formulated products used by household and institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Other paint products, furniture coatings, or architectural coatings are not considered consumer products (CAPCOA 2022). Consumer product ROG emissions are estimated in CalEEMod based on the floor area of nonresidential buildings and on the default factor of pounds of ROG per building square foot per day.

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers. The emissions associated with landscape equipment use are estimated based on CalEEMod default values for emission factors (grams per square foot of nonresidential building space per day) and number of summer days (when landscape maintenance would generally be performed) and winter days (CAPCOA 2022).

Energy

As represented in CalEEMod, energy sources include emissions associated with building electricity and natural gas usage. Electricity use would contribute indirectly to criteria air pollutant emissions; however, the emissions from electricity use are only quantified for GHGs in CalEEMod, since criteria pollutant emissions occur at the site of the power plant, which is typically off site. Per the applicant and consistent with CSU's aim to minimize use of natural gas and transition to electric alternatives, no natural gas would be used on site. All space and water heating will be electrified.

The proposed project would include the installation of a propane tank for the dedicated purpose of supporting lab spaces and other instructional uses. Emissions from daily propane use were calculated in a spreadsheet model using emission factors from the EPA's Compilation of Air Pollutant Emission Factors (AP-42), Section 1.5, *Liquefied Petroleum Gas Combustion,* and project-specific usage data points. Per the applicant, approximately 36 gallons of propane would be used per day.

Stationary

Per preliminary project details, operation of the project would include use of an emergency backup generator. Specifications (i.e., horsepower) for a 150-kW capacity emergency standby generator set were used, with maximum annual usage not to exceed 80 hours. Worst case daily operation of the generator was conservatively calculated to be 24 hours.

Table 4 presents the estimated maximum daily emissions generated during operation of the proposed project. Details of the emission calculations are provided in Attachment B.

Table 4. Estimated Maximum Daily Operations Criteria Air Pollutant Emissions

Source	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	pounds per day					
Area	0.93	—	—	—	—	—
Energy	0.04	0.47	0.27	<0.01	0.02	0.01
Stationary	6.54	18.27	23.72	0.03	0.96	0.96
Total	**7.50**	**18.74**	**23.99**	**0.03**	**0.98**	**0.97**
ICAPCD Threshold	*137*	*137*	*550*	*150*	*150*	*550*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ICAPCD = Imperial County Air Pollution Control District.
See Attachment B for complete results.

As shown in Table 4, the project would not exceed ICAPCD's significance thresholds during operations. Therefore, operational impacts associated with criteria air pollutant emissions would be less than significant.

In considering cumulative impacts from the proposed project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the SSAB is designated as nonattainment for the CAAQS and NAAQS. If a project's emissions would exceed ICAPCD's significance thresholds, it would be considered to have a cumulatively considerable contribution to nonattainment status in the SSAB. If a project does not exceed thresholds and is determined to have less than significant project-specific impacts, it may still contribute to a significant cumulative impact on air quality. The basis for analyzing the proposed project's cumulatively considerable contribution is if the project's contribution accounts for a significant proportion of the cumulative total emissions (i.e., it represents a "cumulatively considerable contribution" to the cumulative air quality impact) and consistency with ICAPCD air quality plans, which address cumulative emissions in the SSAB.

The SSAB has been designated as a federal and state nonattainment area for O_3 and PM_{10}. The nonattainment status is the result of cumulative emissions from various sources of air pollutants and their precursors within the SSAB, including motor vehicles, off-road equipment, and commercial and industrial facilities. Construction of the proposed project would generate ROG and NOx emissions (which are precursors to O_3) and emissions of PM_{10} and $PM_{2.5}$. As indicated in Tables 3 and 4, project-generated construction and operational emissions would not exceed ICAPCD's emission-based significance thresholds for any criteria air pollutant.

Cumulative localized impacts would potentially result if a construction project were to occur concurrently with another off-site project. Construction schedules for potential future projects near the proposed project site are currently unknown; therefore, potential construction impacts associated with two or more simultaneous projects would be speculative. However, future projects would be subject to CEQA and would require an air quality analysis and, where necessary, mitigation if the project would exceed ICAPCD's significance thresholds. Criteria air pollutant emissions associated with construction activity of future proposed projects also would be reduced through implementation of control measures required by ICAPCD. Cumulative PM_{10} and $PM_{2.5}$ emissions would be reduced because all future projects would be subject to ICAPCD Regulation VIII (*Fugitive Dust Control Measures*), which sets forth general and specific requirements for all construction sites in the ICAPCD.

Based on the previous considerations, the project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants, and cumulative impacts would be **less than significant.**

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are those individuals more susceptible to the effects of air pollution than the population at large. People most likely to be affected by air pollution include children, the elderly, and people with cardiovascular and chronic respiratory diseases. According to CARB, sensitive receptor locations may include hospitals, schools, and day care centers (CARB 2023). The closest sensitive receptor (i.e., residential dwelling) is approximately 1,400 feet to the west of the project site.

The air quality analysis prepared for the 2003 EIR found that there would be "no significant impact" related to exposure of sensitive receptors to substantial pollutant concentrations. The analysis focused on the use of chemical toxics (i.e., pesticides) associated with adjacent/past agricultural activity and its impact on receptors at the project site. The analysis found that there would be no significant impacts related to pesticide drift, and no mitigation measures were required. The project-specific analysis provided below expands this discussion to include the impact of pollutants generated during construction and operation on sensitive receptors within proximity to the site.

Carbon Monoxide Hotspots

Exposure to high concentrations of CO can result in dizziness, fatigue, chest pain, headaches, and impairment of central nervous system functions. Mobile source impacts, including those related to CO, occur essentially on two scales of motion. Regionally, project-related construction travel would add to regional trip generation and increase the vehicle miles traveled within the local airshed and the SSAB. Locally, construction traffic would be added to the roadway system in the vicinity of the project site. Although the SSAB is currently an attainment area for CO, there is a potential for the formation of microscale CO "hotspots" to occur immediately around points of congested traffic. Hotspots can form if such traffic occurs during periods of poor atmospheric ventilation, is composed of a large number of vehicles cold-started and operating at pollution-inefficient speeds, and/or is operating on roadways crowded with non-project traffic. Because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SSAB is steadily decreasing.

The proposed project would have trip generation associated with construction worker vehicles and construction vendor trucks. Title 40 of the California Code of Regulations, Section 93.123(c)(5), Procedures for Determining Localized CO, PM_{10}, and $PM_{2.5}$ Concentrations (hot-spot analysis), states that "CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses are not required to consider construction-related activities, which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established 'Guideline' methods. Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site" (40 CFR 93.123). Accordingly, while proposed project construction would involve on-road vehicle trips from trucks and workers during construction, construction activities would last approximately 19 months and would not require a project-level construction hotspot analysis. As such, potential project-generated impacts associated with CO hotspots would be **less than significant.**

Toxic Air Contaminants

Toxic air contaminants (TACs) are defined as substances that may cause or contribute to an increase in deaths or in serious illness, or that may pose a present or potential hazard to human health. Health effects from carcinogenic air toxics are usually described in terms of cancer risk, with a recommended an incremental threshold of 10 in 1 million. "Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period will contract cancer based on the use of standard Office of Environmental Health Hazard Assessment risk-assessment methodology (OEHHA 2015). In addition, some TACs have non-carcinogenic effects, which are evaluated using a Hazard Index of 1 or more for acute (short-term) and chronic (long-term) non-carcinogenic effects (OEHHA 2015). The greatest potential for TAC emissions during construction would be diesel particulate matter (DPM) emissions from heavy equipment use.

DPM has established cancer risk factors and relative exposure values for long-term chronic health hazard impacts; however, no short-term, acute relative exposure level has been established for DPM. Total project construction would last approximately 19 months, after which construction-related TAC emissions would cease. According to the Office of Environmental Health Hazard Assessment, health risk assessments (which determine the exposure of sensitive receptors to toxic emissions) should be based on a 30-year exposure period for the maximally exposed individual receptor; however, such assessments should also be limited to the period/duration of activities associated with the project. A 19-month construction schedule represents a short duration of exposure (5% of a 30-year exposure period), while cancer and chronic risk from DPM are typically associated with long-term exposure.

Exhaust PM_{10} is typically used as a surrogate for DPM, and as shown in Table 3, which presents total PM_{10} from fugitive dust and exhaust, project-generated construction PM_{10} emissions are anticipated to be minimal, and well below the ICAPCD threshold. In addition, sensitive receptors are located approximately 1,400 feet from the active project construction areas, which would reduce exposure to TACs as TAC emission dispersion increases with distance. Due to the relatively short period of construction activity and minimal DPM emissions on site, TACs generated during construction would not be expected to result in concentrations causing significant health risks. In addition, the proposed project would be required to comply with the following measures, which are required by state law to reduce diesel particulate emissions:

- Fleet owners of mobile construction equipment are subject to the CARB Regulation for In-Use Off-Road Diesel Vehicles (Title 13 California Code of Regulations, Chapter 9, Section 2449), the purpose of which is to reduce DPM and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles.
- All commercial diesel vehicles are subject to Title 13, Section 2485 of the California Code of Regulations, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading shall be limited to 5 minutes; electric auxiliary power units should be used whenever possible.

During operation, the project would include minimal sources of TAC emissions, including use of a diesel-powered emergency generator. Given the minor increase in emissions and distance to the closest receptor (i.e., approximately 1,400 feet), operational activities are not expected to be a significant source of DPM or associated potential health impacts.

Given the relatively brief construction period and the nature of proposed project operations, implementation of the proposed project is not anticipated to expose sensitive receptors to substantial DPM concentrations and impacts would be **less than significant**.

Health Impacts of Criteria Air Pollutants

The SSAB is designated as nonattainment for O_3 for the NAAQS and CAAQS. Thus, existing O_3 levels in the SSAB are at unhealthy levels during certain periods. The health effects associated with O_3 generally relate to reduced lung function. Because the proposed project would not involve construction activities that would result in O_3 precursor emissions (ROG or NOx) that would exceed the ICAPCD thresholds, the project is not anticipated to substantially contribute to regional O_3 concentrations and associated health impacts. Similar to construction, no ICAPCD threshold would be exceeded during operation.

In addition to O_3, NOx emissions contribute to potential exceedances of the NAAQS and CAAQS for NO_2 (since NO_2 is a constituent of NOx). Exposure to NO_2 can cause lung irritation, bronchitis, and pneumonia, and lower resistance to respiratory infections. As depicted in Tables 3 and 4, proposed project construction and operation would not exceed the ICAPCD localized thresholds for NOx. Thus, construction and operation of the proposed project are not expected to exceed the NO_2 standards or contribute to associated health effects.

CO tends to be a localized impact associated with congested intersections. CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions. CO hotspots were discussed previously as a less than significant impact. Thus, the proposed project's CO emissions would not contribute to the health effects associated with this pollutant.

The SSAB also is designated as nonattainment for PM_{10} under the NAAQS and CAAQS. Particulate matter contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Particulate matter exposure has been linked to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing (US Environmental Protection Agency [EPA] 2016). As with O_3 and NOx, the proposed project would not generate emissions of PM_{10} or $PM_{2.5}$ that would exceed ICAPCD thresholds. Accordingly, the proposed project's PM_{10} and $PM_{2.5}$ emissions are not expected to cause any increase in related regional health effects for these pollutants.

In summary, the proposed project would not result in any potentially significant contribution to local or regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants. Impacts would be **less than significant**.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The occurrence and severity of potential odor impacts depends on numerous factors. The nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location each contribute to the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints.

The Initial Study (IS) prepared for the 2003 EIR found that there would be "no impact" related to objectionable odors affecting a substantial number of people. Given that the proposed project's construction and operational activities are within the scope of what was previously analyzed in the certified 2003 EIR, the proposed project remains consistent with and encompassed by that determination. A discussion of odors specific to the proposed project is provided below for additional context.

Construction

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the proposed project. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment and architectural coatings. Such odors would be temporary, disperse rapidly from the proposed project site, and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be **less than significant.**

Operation

Land uses and industrial operations that are potential sources of odor include wastewater treatment plants, sanitary landfills, composting stations, feedlots, asphalt plants, painting/coating operations, and rendering plants (ICAPCD 2017). In addition to the odor source, the distance between the sensitive receptor(s) and the odor source, as well as the local meteorological conditions, are considerations in the potential for a project to frequently expose the public to objectionable odors. Although localized air quality impacts are focused on potential impacts to sensitive receptors, such as residences and schools, other land uses where people may congregate (e.g., workplaces) or uses with the intent to attract people (e.g., restaurants and visitor-serving accommodations) should also be considered in the evaluation of potential odor nuisance impacts. The proposed project would include education facilities development consistent with the land uses analyzed in the certified 2003 EIR, which is not expected to produce any nuisance odors; therefore, impacts related to odors caused by the proposed project during operations would be **less than significant.**

5 Greenhouse Gas Emissions Assessment

Greenhouse gases (GHG) are those that absorb infrared radiation (i.e., trap heat) in the Earth's atmosphere. The trapping and buildup of heat in the atmosphere near the Earth's surface (the troposphere), is referred to as the "greenhouse effect", and is a natural process that contributes to the regulation of the Earth's temperature, creating a livable environment on Earth. The Earth's temperature depends on the balance between energy entering and leaving the planet's system, and many factors (natural and human) can cause changes in Earth's energy balance. Human activities that generate and emit GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the Earth's surface temperature to rise. This rise in temperature has led to large-scale changes to the Earth's system (e.g., temperature, precipitation, wind patterns, etc.), which are collectively referred to as climate change. Global climate change is a cumulative impact; a project contributes to this impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. Thus, GHG impacts are recognized exclusively as cumulative impacts (CAPCOA 2008).

As defined in California Health and Safety Code Section 38505(g) for purposes of administering many of the state's primary GHG emissions reduction programs, GHGs include CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride (see also CEQA Guidelines Section 15364.5). The primary GHGs that would be emitted by project-related construction and operations include CO2, CH_4, and N2O.

The Intergovernmental Panel on Climate Change developed the global warming potential (GWP) concept to compare each GHG's ability to trap heat in the atmosphere relative to another gas. The reference gas used is CO_2; therefore, GWP-weighted emissions are measured in metric tons (MT) of CO_2 equivalent (CO_2e). Consistent with CalEEMod Version 2022.1.1.18, this GHG emissions analysis utilizes the following GWPs: 25 for CH_4 (i.e., emissions of 1 MT of CH_4 are equivalent to emissions of 25 MT of CO_2), and 298 for N_2O, based on the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007).

GHG emissions associated with construction of the proposed project were estimated for the following emission sources: operation of off-road construction equipment, on-road vendor trucks, and worker vehicles. GHG emission sources associated with operation of the proposed project include area, energy, mobile, solid waste, water, and wastewater categories. The detailed proposed project construction and operational modeling parameters are included in Attachment B, *Air Quality and Greenhouse Gas Emissions CalEEMod Output Files.*

5.1 Greenhouse Gas Impact Analysis and Conclusions

5.1.1 Thresholds of Significance

The significance criteria used to evaluate the proposed project's GHG emissions impacts are based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this GHG emissions analysis, the proposed project would have a significant environmental impact if it would (14 CCR 15000 et seq.):

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

The CEQA Guidelines do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA (CNRA 2009). The State of California has not adopted emission-based thresholds for GHG emissions under CEQA. The Governor's Office of Planning and Research's Technical Advisory, titled Discussion Draft CEQA and Climate Change Advisory (OPR 2018), states the following:

> [N]either the CEQA statute nor the CEQA Guidelines prescribe thresholds of significance or particular methodologies for performing an impact analysis. This is left to lead agency judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable. Even in the absence of clearly defined thresholds for GHG emissions, such emissions must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact.

Furthermore, the advisory document indicates that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice." Section 15064.7(c) of the CEQA Guidelines specifies that "when adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

Neither CSU/SDSU nor the ICAPCD has adopted a numeric significance threshold for determining significant impacts associated with project-level GHG emissions. Therefore, in the absence of guidance from these agencies, the significance analysis for the proposed project's GHG emissions relies on guidance from the neighboring South Coast Air Quality Management District (SCAQMD), as described below.

In October 2008, SCAQMD staff published numeric CEQA significance thresholds for lead agencies to use in assessing GHG impacts of residential and commercial development projects, as presented in its Draft Guidance Document—Interim CEQA Greenhouse Gas (GHG) Significance Threshold (SCAQMD 2008). This document, which built upon the California Air Pollution Control Officers Association's previous guidance, explored various approaches for establishing a significance threshold for GHG emissions. The draft interim CEQA thresholds guidance document was not adopted or approved by the SCAQMD Governing Board. However, in December 2008, the SCAQMD Governing Board adopted an interim 10,000 MT CO_2e per-year screening level threshold for stationary source/industrial projects for which the SCAQMD is the lead agency (SCAQMD 2010). The 10,000 MT CO_2e per-year threshold, which was derived from GHG reduction targets established in Executive Order S-3-05, was based on the conclusion that the threshold was consistent with achieving an emissions capture rate of 90% of all new or modified stationary source projects.

SCAQMD also formed a GHG CEQA Significance Threshold Working Group to work with its staff on developing GHG CEQA significance thresholds. From December 2008 to September 2010, SCAQMD staff hosted working group meetings and revised its 2008 draft threshold proposal several times, although it did not officially provide these proposals in a subsequent document. The most recent proposal issued by SCAQMD, issued in September 2010, uses the following tiered approach to evaluate potential GHG impacts from various uses (SCAQMD 2010):

Tier 1. Determine if CEQA categorical exemptions are applicable. If not, move to Tier 2.

Tier 2. Consider whether or not the proposed project is consistent with a locally adopted GHG reduction plan that has gone through public hearing and CEQA review, that has an approved inventory, includes monitoring, etc. If not, move to Tier 3.

Tier 3. Consider whether the project generates GHG emissions in excess of screening thresholds for individual land uses. The 10,000 MT CO_2e per-year threshold for industrial uses would be recommended for use by all lead agencies. Under option 1, separate screening thresholds are proposed for residential projects (3,500 MT CO_2e per year), commercial projects (1,400 MT CO_2e per year), and mixed-use projects (3,000 MT CO_2e per year). Under option 2, a single numerical screening threshold of 3,000 MT CO_2e per year would be used for all non-industrial projects. If the project generates emissions in excess of the applicable screening threshold, move to Tier 4.

Tier 4. Consider whether the project generates GHG emissions in excess of applicable performance standards for the project service population (population plus employment). The efficiency targets were established based on the goal of Assembly Bill (AB) 32 to reduce statewide GHG emissions to 1990 levels by 2020. The 2020 efficiency targets are 4.8 MT CO_2e per-service population for project-level analyses and 6.6 MT CO_2e per-service population for plan-level analyses. If the project generates emissions in excess of the applicable efficiency targets, move to Tier 5.

Tier 5. Consider the implementation of CEQA mitigation (including the purchase of GHG offsets) to reduce the project efficiency target to Tier 4 levels.

Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." 'Therefore, to determine the proposed project's potential to generate GHG emissions that would have a significant impact on the environment, its GHG emissions were compared to SCAQMD's 3,000 MT CO_2e per year screening threshold recommended for non-industrial projects. Per the SCAQMD guidance, construction emissions should be amortized over the operational life of the proposed project, which is assumed to be 30 years (SCAQMD 2008a). This impact analysis, therefore, adds amortized construction emissions to the estimated annual operational emissions and then compares operational emissions to the proposed SCAQMD threshold of 3,000 MT CO2e per year.

5.1.2 Impact Analysis

As discussed in Section 3, Analysis Methodology, at the time the 2003 EIR was certified, an evaluation of GHG emissions was not required under CEQA. Therefore, the impacts of project-related construction and operational GHG emissions was not previously considered. Pursuant to CEQA Guidelines Section 15168(c)(1), an analysis of the proposed project's GHG emissions has been prepared as described below.

a) Would the project generate greenhouse gas emissions either directly or indirectly that may have a significant impact on the environment?

Construction Emissions

CalEEMod was used to calculate the construction GHG emissions based on the construction scenario described in Section 4, Air Quality Assessment. Construction of the project is anticipated to commence in January 2024 and would last approximately 19 months, ending in September 2025. On-site sources of GHG emissions include off-road equipment and off-site sources include vendor trucks and worker vehicles. Additional details are provided in Attachment B, *Air Quality and Greenhouse Gas Emissions CalEEMod Output Files.*

Table 5 presents construction emissions for the project from on-site and off-site emission sources.

Table 5. Estimated Annual Construction Greenhouse Gas Emissions

Year	CO_2	CH_4	N_2O	R	CO_2e
	Metric Tons per Year				
2024	266	0.01	0.01	0.07	269
2025	165	0.01	<0.01	0.05	166
Total	**431.25**	**0.02**	**0.01**	**0.12**	**434.63**
				Amortized (30-year project life)	*14*

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; R= refrigerants; CO_2e = carbon dioxide equivalent
See Attachment B for complete results.
Totals may not add due to rounding.

Operational Emissions

Once operational, the proposed project would result in GHG emissions from energy use, solid waste, water use, wastewater generation, refrigerants, and stationary sources (i.e., the emergency generator). As with construction, GHG emissions from proposed project operations were estimated using CalEEMod based on a combination of project-specific detail provided by the applicant and default parameters, where necessary. All details for operational criteria air pollutants discussed in Section 4, Air Quality Assessment, are also applicable for the estimation of operations-related GHG emissions. As such, see Section 4, Air Quality Assessment, for a discussion of the operational emissions calculation methodology. Additional information for GHG-specific emissions sources are discussed in the following sections.

As noted above, the previously approved FTE student enrollment would not increase with the proposed project above what was already analyzed in the certified 2003 EIR for the approved Campus Master Plan. As such, given that the allowable FTE growth was approved as part of the Campus Master Plan and analyzed in the certified 2003 EIR, the scope of this analysis does not include impacts from the related mobile trips. Therefore, only GHG emissions related to the proposed project's building envelope and site footprint (e.g., energy, solid waste, water) were included in the operational emissions analysis. For additional details see Attachment B, *Air Quality and Greenhouse Gas Emissions CalEEMod Output Files.*

Energy

The estimation of operational energy emissions was based on CalEEMod land use defaults and units or total area (i.e., square footage) of the proposed project land use (i.e., University/College). For nonresidential buildings, CalEEMod energy intensity value (electricity or natural gas usage per square foot per year) parameters are based on the California Commercial End-Use Survey database. Emissions are calculated by multiplying the energy use by the utility carbon intensity (pounds of GHGs per kilowatt-hour for electricity or 1,000 British thermal units for natural gas) for CO_2 and other GHGs.

Consistent with CSU's aim to minimize use of natural gas and transition to electric alternatives, no natural gas would be used on site, and all space and water heating will be electrified. Electrifying uses at the site would reduce GHG emissions associated with project operations by converting a portion of the project's forecasted natural gas consumption to electricity. To estimate emissions associated with the elimination of natural gas, use of natural gas during operation of the project was set at 0 kBTU/year in CalEEMod. Electricity consumption (i.e., kWh/year) was adjusted based on the relative efficiency per source of energy use (e.g., efficiency of powering water heaters with electricity versus natural gas). Energy use efficiency data were obtained from the U.S. Energy Information Administration and U.S. Department of Energy, as appropriate. For further details, see Attachment B, *Air Quality and Greenhouse Gas Emissions CalEEMod Output Files*.

Annual electricity emissions were estimated in CalEEMod using the emissions factors for Imperial Irrigation District, which would be the electricity provider for the project. CalEEMod default energy intensity factors (CO_2, CH_4, and N_2O mass emissions per kilowatt-hour) for Imperial Irrigation District are based on the forecasted factors for the operational year. Per the project applicant, the solar photovoltaic (PV) systems installed at the site would provide approximately 54 kW of renewable power.

As discussed previously, a propane tank would be provided on site for the dedicated purpose of supporting lab spaces and other instructional uses. Emissions from annual propane use were calculated in a spreadsheet model using emission factors from the EPA's Compilation of Air Pollutant Emission Factors (AP-42), Section 1.5, *Liquefied Petroleum Gas Combustion,* and project-specific usage data points. Approximately 7,600 gallons of propane would be used per year at the site, based on information provided by the applicant.

Water and Wastewater

Supply, conveyance, treatment, and distribution of water for the proposed project requires the use of electricity, which would result in associated indirect GHG emissions. Similarly, wastewater generated by the proposed project requires the use of electricity for conveyance and treatment, along with GHG emissions generated during wastewater treatment (i.e., biological processes). Water consumption estimates for both indoor and outdoor water use and associated electricity consumption from water use and wastewater generation were estimated using CalEEMod default values.

Refrigerants

Refrigerants are substances used in equipment for air conditioning and refrigeration. Most of the refrigerants used today are HFCs or blends thereof, which can have high GWP values. All equipment that uses refrigerants has a charge size (i.e., quantity of refrigerant the equipment contains), an operational refrigerant leak rate, and a GWP specific to the type of refrigerant. GHG emissions related to refrigerant leaks from operation of the proposed project were estimated using CalEEMod default parameters. CalEEMod quantifies refrigerant emissions from leaks during regular operation and routine servicing over the equipment lifetime, and derives average annual emissions from the lifetime estimate.

Solid Waste

The proposed project would generate solid waste, resulting in CO_2e emissions associated with landfill off-gassing. CalEEMod default values for solid waste generation for the proposed land use were used to estimate GHG emissions associated with solid waste.

Table 6 presents the estimated annual GHG emissions generated during operation of the proposed project. The emissions results presented reflect operational year 2026, as it is anticipated to be the first full year of operation following completion of project construction. Details of the emission calculations are provided in Attachment B, *Air Quality and Greenhouse Gas Emissions CalEEMod Output Files*.

Table 6. Estimated Annual Operational Greenhouse Gas Emissions

Emission Source	CO_2	CH_4	N_2O	R	CO_2e
	Metric Tons per Year				
Energy	174.78	0.02	0.01	<0.01	176.73
Water Use	2.67	0.06	<0.01	<0.01	4.58
Solid Waste	13.84	1.38	<0.01	<0.01	48.43
Refrigerants	<0.01	<0.01	<0.01	0.02	0.02

Stationary Sources	5.06	<0.01	<0.01	<0.01	5.07
Total Annual Operational Emissions	**196.35**	**1.46**	**0.01**	**0.02**	**234.84**
Amortized 30-year Construction Emissions					14
Total Annual Project Emissions					**249**
SCAQMD Threshold					3,000
Threshold Exceeded?					**No**

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; R= refrigerants; CO_2e = carbon dioxide equivalent
See Attachment B for complete results.
The values shown are the annual emissions reflect California Emissions Estimator Model "mitigated" output.
Totals may not add due to rounding.

As shown in Table 6, the estimated total GHG emissions during operation of the proposed project would be approximately 249 MT CO_2e per year, including amortized construction emissions. The proposed project would not exceed the SCAQMD threshold of 3,000 MT CO_2e per year. Projects below this significance criterion have a minimal contribution to global emissions and are considered to have less than significant impacts. Therefore, operational impacts associated with directly or indirectly generating a significant quantity of GHG emissions would be **less than significant.**

Of note, it is likely that emissions estimated here are well below what would have been estimated had GHG emissions been analyzed in the 2003 EIR. Since 2003, the State of California has enacted a comprehensive suite of laws to increase efficiencies and thereby reduce GHG emissions associated with water use, solid waste disposal, and building energy use. Accordingly, construction and operation of the proposed project benefits from the current landscape, which serves to reduce GHG emissions as compared to what was in place in 2003.

b) ***Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.***

The proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, and impacts would be **less than significant.** Applicable plans for the proposed project site include the California State University Sustainability Policy, as most recently revised in May 2022; the 2017 Climate Action Plan for San Diego State University (CAP); and CARB's Scoping Plan. Each of these plans is described below along with an analysis of the proposed project's potential to conflict with the related GHG emission reduction goals.

Potential to Conflict with the California State University Sustainability Policy

The CSU Board of Trustees adopted its first systemwide Sustainability Policy in May 2014, and most recently revised the Sustainability Policy in May 2022. The Sustainability Policy was developed to integrate sustainability into all facets of the CSU, including academics, facilities operations, built environment, and student life. The Sustainability Policy focuses mainly on energy and GHG emissions, and largely aligns with the State of California's energy and GHG emissions reduction goals (CSU 2022). It aims to reduce the environmental impact of construction and operation of buildings and to integrate sustainability across the curriculum through 11 broad policies, including: University Sustainability; Climate Action Plan; Energy Resilience and Procurement; Energy Conservation, Carbon Reduction, and Utility Management; Water

Conservation; Sustainable Procurement; Waste Management; Sustainable Food Service; Sustainable Building & Lands Practices; Physical Plant Management; and Transportation.

The proposed project would comply with all relevant requirements of the CSU Sustainability Policy. For example, the project shall incorporate on-site solar PV; meet or exceed the minimum requirements equivalent to LEED Silver; and, exceed the applicable energy codes and regulations (i.e., California Code of Regulations, Title 24, Part 6 [Building Energy Efficiency Standards]) by ten percent. Additionally, no natural gas would be used on site, and all space and water heating would be electrified, which is consistent with CSU's aim to minimize use of natural gas and transition to electric alternatives.

Potential to Conflict with the 2017 Climate Action Plan for San Diego State University

The SDSU CAP was adopted in May 2017 to provide goals and strategies to achieve carbon neutrality and improve sustainability efforts campus-wide. The CAP includes results of a baseline emissions inventory that summarizes GHG emissions from campus operations in 2015 and projected emissions to future years to inform development of appropriate reduction strategies. While the SDSU CAP does include goals and strategies that would result in a reduction of GHG emissions at the proposed project site, the SDSU CAP is not considered qualified per CEQA Guidelines Section 15183.5. Additionally, the CAP was prepared with focus on the SDSU main campus location in La Mesa. Therefore, inclusion of this plan is for informational purposes only.

Emissions sources in the CAP's baseline inventory and emissions projections include energy use, solid waste, water use, and student and faculty/staff commute (i.e., mobile source emissions) associated with activity at SDSU's main campus in La Mesa. Overall, emissions from energy use and mobile sources accounted for the majority of GHG emissions in the baseline inventory, and therefore present the greatest opportunity for future GHG emissions reductions. As previously discussed, the previously approved FTE student enrollment would not increase with the proposed project above what was already analyzed in the certified 2003 EIR for the approved Campus Master Plan. As such, given that the allowable FTE growth was approved as part of the Campus Master Plan and analyzed in the certified 2003 EIR, the scope of this analysis does not include impacts from the related mobile trips. Therefore, only strategies related to the proposed project's building envelope and site footprint (e.g., energy, solid waste, water) would be applicable to this analysis.

The CAP vision for energy highlights a shift from natural gas-based co-generation toward grid energy and on-site renewables. For solid waste, the CAP aims to encourage recycling and move toward zero-waste in the future. The CAP's vision for water use is to encourage efficient landscaping (e.g., drought-resistant and native species, limited turf, and efficient irrigation systems), and ensure ultra-low flow and high-performance fixtures are used for potable systems.

Consistent with this vision, the project will contain no natural gas, and all space and water heating will be electrified. The proposed project would also exceed the Title 24 Building Energy Efficiency Standards by at least ten percent and will meet or exceed the minimum requirements equivalent to LEED Silver consistent with the CSU Sustainability Policy, reducing overall energy demand and consumption. Additionally, the proposed project includes on-site solar capable of generating approximately 54 kW of renewable power, which equates to accommodating approximately 8.6% of the proposed project's total annual electricity demand.

As such, the proposed project would support the vision of and not conflict with the overall goal of the SDSU CAP. Specifically, the proposed project's incorporation of on-site solar and elimination of natural gas supports SDSU's goal to achieve carbon neutrality through increased energy efficiency and reliance on renewable energy alternatives for campus operations.

Potential to Conflict with CARB's Scoping Plan

The California State Legislature passed the Global Warming Solutions Act of 2006 (Assembly Bill 32 [AB 32]) to provide initial direction to limit California's GHG emissions to 1990 levels by 2020 and initiate the state's long-range climate objectives. Since the passage of AB 32, the State has adopted GHG emissions reduction targets for future years beyond the initial 2020 horizon year. For the proposed project, the relevant GHG emissions reduction targets include those established by Senate Bill 32 (SB 32) and AB 1279, which require GHG emissions be reduced to 40% below 1990 levels by 2030, and 85% below 1990 levels by 2045, respectively. In addition, AB 1279 calls upon the state to achieve net zero GHG emissions by no later than 2045 and achieve and maintain net negative GHG emissions thereafter.

As defined by AB 32, the California Air Resources Board (CARB) is required to develop the Scoping Plan, which provides the framework for actions to achieve the state's GHG emission targets. The Scoping Plan is required to be updated every five years and requires CARB and other state agencies to adopt regulations and initiatives that will reduce GHG emissions statewide. The first Scoping Plan was adopted in 2008, with subsequent updates adopted in 2014, 2017, and (most recently) 2022. While the Scoping Plan is not directly applicable to specific projects, it does provide the official framework for the measures and regulations that will be pursued by the State's executive branch of government to reduce California's GHG emissions in alignment with the legislatively-adopted targets. Therefore, a project would be found to not conflict with the statutes establishing statewide GHG reduction targets if it would meet the Scoping Plan policies and would not impede attainment of the goals therein.

CARB's 2017 Scoping Plan was the first to address the state's strategy for achieving the 2030 GHG reduction target set forth in SB 32 (CARB 2017). The most recent 2022 Scoping Plan outlines the state's plan to reduce emissions and achieve carbon neutrality by 2045 in alignment with AB 1279, and assesses the state's progress towards meeting the 2030 SB 32 target (CARB 2022). As such, given that SB 32 and AB 1279 are the relevant GHG emission targets, the 2017 and 2022 Scoping Plans that outline the strategy to achieve those targets are the most applicable to the proposed project.

To achieve the 2030 goal of 40 percent below 1990 GHG emission levels, the 2017 Scoping Plan included measures to promote renewable energy and energy efficiency (including the mandates of SB 350), measures to increase the stringency of the Low Carbon Fuel Standard (LCFS), measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and measures to increase the stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, the 2017 Scoping Plan also recommended continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20%. Many of these measures and programs would result in the reduction of project-related GHG emissions with no action required at the project-level. These programs would benefit GHG emission reductions through increased energy efficiency and renewable energy production (SB 350), reduction in carbon intensity of transportation fuels (LCFS), and the accelerated efficiency and electrification of the statewide vehicle fleet (Mobile Source Strategy). Implementation of these statewide programs would result in a reduction of operational GHG emissions over the project lifetime.

CARB approved the 2022 Scoping Plan in December 2022 to outline the state's plan to reduce anthropogenic emissions to 85% below 1990 levels by 2045 and achieve carbon neutrality by 2045 or earlier. The 2022 Scoping Plan also assesses the progress the state is making towards reducing GHG emissions by at least 40% below 1990 levels by 2030, as is required by SB 32 and laid out in the 2017 Scoping Plan. The carbon reduction programs included in the 2022 Scoping Plan build on and accelerate those currently in place, including moving to zero-emission transportation; phasing out use of fossil gas use for heating homes and buildings; reducing chemical and refrigerants with high GWP; providing communities with sustainable options for walking, biking, and public transit; and displacement of fossil-fuel fired electrical generation through use of renewable energy alternatives (e.g., solar arrays and wind turbines) (CARB 2022c). Implementation of the measures and programs included in the 2022 Scoping Plan largely are the responsibility of policymakers and would result in the reduction of project-related GHG emissions with no action required at the project-level. Given that the proposed project would be fully electric (i.e., no natural gas consumption) and includes on-site solar capable of accommodating approximately 8.6% of the proposed project's total annual electrical demand, implementation would support the 2022 Scoping Plan's goals of displacing fossil-fuel fired electrical generation through use of renewable alternatives.

The 2045 carbon neutrality goal required CARB to expand proposed actions in the 2022 Scoping Plan to include those that capture and store carbon in addition to those that reduce only anthropogenic sources of GHG emissions. The proposed project would support the state's carbon neutrality goals, as implementation would increase renewable, carbon-free electricity sources within the state, decreasing reliance on fossil fuels. While transitioning to renewable alternatives will support the state's overall climate goals, the 2022 Scoping Plan also indicates that achieving carbon neutrality will require research, development, and deployment of additional methods to capture atmospheric GHG emissions (e.g., mechanical direct air capture). Given that the specific path to neutrality will require development of technologies and programs that are not currently known or available, the project's role in supporting the statewide goal would be speculative and cannot be wholly identified at this time.

Overall, the proposed project would comply will all regulations adopted in furtherance of the Scoping Plan to the extent applicable and required by law. As mentioned above, several Scoping Plan measures would result in reductions of project-related GHG emissions with no action required at the project-level, including those related to energy efficiency, reduced fossil fuel use, and renewable energy production. As demonstrated above, the proposed project would not conflict with CARB's 2017 or 2022 Scoping Plan updates and with the state's ability to achieve the 2030 and 2045 GHG reduction and carbon neutrality goals. Further, the proposed project's consistency with the applicable measures and programs would assist in meeting the County's contribution to GHG emission reduction targets in California.

6 Energy Assessment

Project implementation would result in energy use for construction and operation, including use of electricity and petroleum-based fuels. The electricity and petroleum used for construction of the proposed project would be temporary, would be substantially less than that required for project operation, and would have a negligible contribution to the project's overall energy consumption.

The proposed project's impact on energy resources is discussed separately below for construction and operation. Energy consumption (electricity and petroleum consumption) was estimated using CalEEMod data from the air quality and GHG assessment, which was based on modeling inputs developed in consultation with the project applicant, as well as default parameters where necessary. For further detail on the modeling parameters and results of the energy analysis, please refer to the Attachment B, *Air Quality and Greenhouse Gas Emissions CalEEMod Output Files.*

6.1 Energy Impact Analysis and Conclusions

6.1.1 Thresholds of Significance

The significance criteria used to evaluate the proposed project's energy impacts are based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this energy analysis, the proposed project would have a significant environmental impact if it would (14 CCR 15000 et seq.):

a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

6.1.2 Impact Analysis

As discussed in Section 3, Analysis Methodology, at the time the 2003 EIR was certified, an evaluation of energy was not required under CEQA. Pursuant to CEQA Guidelines Section 15168(c)(1), an analysis of the proposed project's energy impacts relating to construction and operation of the proposed sciences building has been prepared as described below.

a) Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.

Implementation of the proposed project would result in energy use for construction and operation, including use of electricity, propane, and other petroleum-based fuels. The electricity and fuel used for construction of the proposed project would be temporary, would be substantially less than that required for project operation, and would have a negligible contribution to the project's overall energy consumption. Additionally, although electricity usage at the campus would increase due to the implementation of the project, the project's energy efficiency would exceed the current Building Energy Efficiency Standards (Title 24) in accordance with the CSU Sustainability Policy. Further, while the project would see an increase in petroleum use during construction and operation, vehicles would use less petroleum due to advances in fuel economy and potential reduction in vehicle miles traveled (VMT) over time.

The proposed project's impact related to energy resources is discussed separately below for construction and operation. Energy consumption (electricity and petroleum consumption) was estimated using CalEEMod data from the air quality and GHG assessment. For further detail on the modeling parameters and results of the energy analysis, please refer to the Attachment B, *Air Quality and Greenhouse Gas Emissions CalEEMod Output Files.*

Construction Energy Use

Electricity

Electricity consumed during project construction would vary throughout the construction period based on the construction activities being performed. Various construction activities would require electricity, including the conveyance of water that would be used for dust control (supply and conveyance) and electricity to power any necessary lighting during construction, electronic equipment, or other construction activities necessitating electrical power. Such electricity demand would be temporary, nominal, and would cease upon the completion of construction. Imperial Irrigation District is the electricity provider to the project site and provided approximately 3,520 Gigawatt-hours of electricity in 2021 (California Energy Commission [CEC] 2023a). Overall, construction activities associated with the proposed project would require limited electricity consumption that would not be expected to have an adverse impact on available Imperial Irrigation District electricity supplies and infrastructure. Therefore, the use of electricity during project construction would not be wasteful, inefficient, or unnecessary.

Petroleum-Based Fuels

Petroleum-based fuel usage represents most energy consumed during construction. Petroleum fuels would be used to power off-road construction vehicles and equipment on the project site, construction worker travel to and from the project site, as well as construction material delivery truck trips.

Fuel consumption from construction equipment and vehicles was estimated by converting the total carbon dioxide (CO_2) emissions from each construction phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. All off-road equipment and vendor trucks are anticipated to use diesel fuel, while worker vehicles are analyzed based upon gasoline fuel use. Construction is estimated to last approximately 19 months beginning in January 2024. The conversion factor for gasoline is 8.78 kilograms per metric ton CO_2 per gallon, and the conversion factor for diesel is 10.21 kilograms per metric ton CO_2 per gallon (The Climate Registry 2021). The estimated diesel fuel usage from construction of the proposed project is shown in Table 7.

Table 7. Estimated Construction Fuel Use

Construction Year	Off-Road Equipment	On-Road Trucks	On-Road Workers
	Fuel Use (gallons)		
2024	21,325	2,245	2,944
2025	13,055	1,436	1,914
Total	**34,379**	**3,681**	**4,858**

Notes:
See Attachment B for complete results.
Totals may not add due to rounding.

As shown in Table 7, construction of the proposed project is anticipated to require 4,858 gallons of gasoline and 38,060 gallons of diesel over the 19-month construction period. The proposed project would be required to comply with the CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to 5 minutes. The proposed project would also be subject to CARB's In-Use Off-Road Diesel Vehicle Regulation that requires the vehicle fleet to reduce emissions by retiring, replacing, repowering older engines, or installing Verified Diesel Emissions Control Strategies. Furthermore, earthwork at the project site would be balanced, which supports efficiency during construction given that overall truck trips would be minimized. Therefore, impacts associated with construction energy use would be **less than significant.**

Operations Energy Use

Electricity

The proposed project would require electricity for multiple purposes at buildout, including cooling, lighting, appliances, etc. Additionally, the supply, conveyance, treatment, and distribution of water would indirectly result in electricity usage. Electricity consumption associated with project operation is based on the CalEEMod outputs presented in Attachment B, *Air Quality and Greenhouse Gas Emissions CalEEMod Output Files*.

CalEEMod default values for energy consumption for the proposed project were applied for the project analysis. The energy use from non-residential land uses is calculated in CalEEMod based on the California Commercial End-Use Survey database. Energy use in buildings is divided by the program into end-use categories subject to Title 24 requirements (end-uses associated with the building envelope, such as the HVAC system, water heating system, and integrated lighting) and those not subject to Title 24 requirements (such as appliances, electronics, and miscellaneous "plug-in" uses).

Total annual electricity demand associated with proposed project operation would be approximately 1,106,361 kWh/year. As mentioned previously, the 54-kW on-site PV solar system is expected to accommodate approximately 8.6% of the proposed project's total annual electrical demand, for a net electrical demand of 1,009,742 kWh/year required from the grid. For context, in 2021, California used approximately 280 billion kilowatt-hours of electricity (CEC 2023b). Locally, in 2021, non-residential electricity demand in Imperial County was approximately 0.84 billion kilowatt-hours (CEC 2023b).

Title 24 of the California Code of Regulations serves to enhance and regulate California's building standards. The most recent amendments to Title 24, Part 6, referred to as the 2022 standards, became effective on January 1, 2023. As discussed in Section 5.1.2 above, the proposed project would exceed the Title 24 Building Energy Efficiency Standards by at least ten percent in compliance with the CSU Sustainability Policy. Exceedance of the applicable Title 24 standards would reduce overall energy consumption of the proposed project and would ensure that the energy demands would not be inefficient, wasteful, or otherwise unnecessary, and the project's effect on electrical demands during operation would be **less than significant.**

Natural Gas

Consistent with CSU's aim to minimize use of natural gas and transition to electric alternatives, operation of the proposed project would be fully electric and would not require natural gas. As such, there would be no impact to natural gas related supply and infrastructure capacity and the project's effect on natural gas demands during operation would be **less than significant.**

Petroleum

During operation, fuel consumption resulting from the project would involve the use of landscaping equipment and use of the emergency generator. Additionally, a propane tank would be provided on site for the dedicated purpose of supporting lab spaces and other instructional uses. As discussed previously, the proposed project would not increase the Campus Master Plan's approved 850 FTE student enrollment. Given that the allowable FTE growth was analyzed in the certified 2003 EIR and approved as a component of the Campus Master Plan, the scope of this analysis does not include impacts from the related mobile trips, including their petroleum use.

Annual petroleum use from operation of landscaping equipment and the emergency generator would be approximately 495 gallons per year. Petroleum consumption from propane use during operation would be approximately 7,600 gallons per year. By comparison, California as a whole consumed approximately 22 billion gallons of petroleum in 2020 (U.S. Energy Information Administration [EIA] 2023) and in 2021 the County consumed approximately 74 million gallons of gasoline, and 27 million gallons of diesel (CEC 2022). As such, petroleum demand required for implementation of the proposed project is relatively insignificant and would not be inefficient, wasteful, or otherwise unnecessary. The project's effect on petroleum supply during operation would be **less than significant.**

In summary, implementation of the project would increase the demand for electricity and petroleum in the region during construction and operation. However, because the project would implement all current, applicable regulations and policies, the project would not be wasteful, inefficient, and would not result in unnecessary energy resource consumption. Relatedly, since the proposed project would comply with and exceed the Title 24 energy conservation standards pursuant to the CSU Sustainability Policy, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of energy. Moreover, on-site PV solar is expected to accommodate approximately 8.6% of the proposed project's electrical demand during operations. Therefore, impacts would be **less than significant.**

Of note, and consistent with the discussion of GHG emissions impact above (see Section 5.1.2, Greenhouse Gas Emissions Assessment Impact Analysis), it is likely that energy use estimated here is well below what would have been estimated had energy been analyzed in the 2003 EIR. Since 2003, the State of California has enacted a comprehensive suite of laws to increase efficiencies and thereby reduce energy use associated with water use, solid waste disposal, and building energy use, among others. Accordingly, construction and operation of the proposed project benefits from the current legal landscape, which serves to reduce energy demand as compared to what was in place in 2003.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. At a minimum, the proposed project would be subject to and would comply with the 2022 California Building Code Title 24 (24 CCR, Part 6). Additionally, as discussed in Section 5.1.2, the proposed project would not conflict with CSU's Sustainability Policy or the SDSU CAP, which was adopted in 2017 to achieve carbon neutrality, in part, through goals and strategies that support increased energy efficiency and transition to renewable energy alternatives campus-wide. Specifically, no natural gas would be used on site, and all space and water heating would be electrified, which is consistent with CSU's aim to minimize use of natural gas and transition to electric alternatives.

The proposed project would also not conflict with CARB's Climate Change Scoping Plan, which identifies several strategies to reduce GHG emissions through energy efficiency. As discussed in further detail in Section 5.1.2, the proposed project would be subject to these strategies as many are state actions requiring no additional involvement at the project level. As such, implementation of the proposed project would not conflict with applicable plans for energy efficiency, and the impacts during construction and operation would be **less than significant**.

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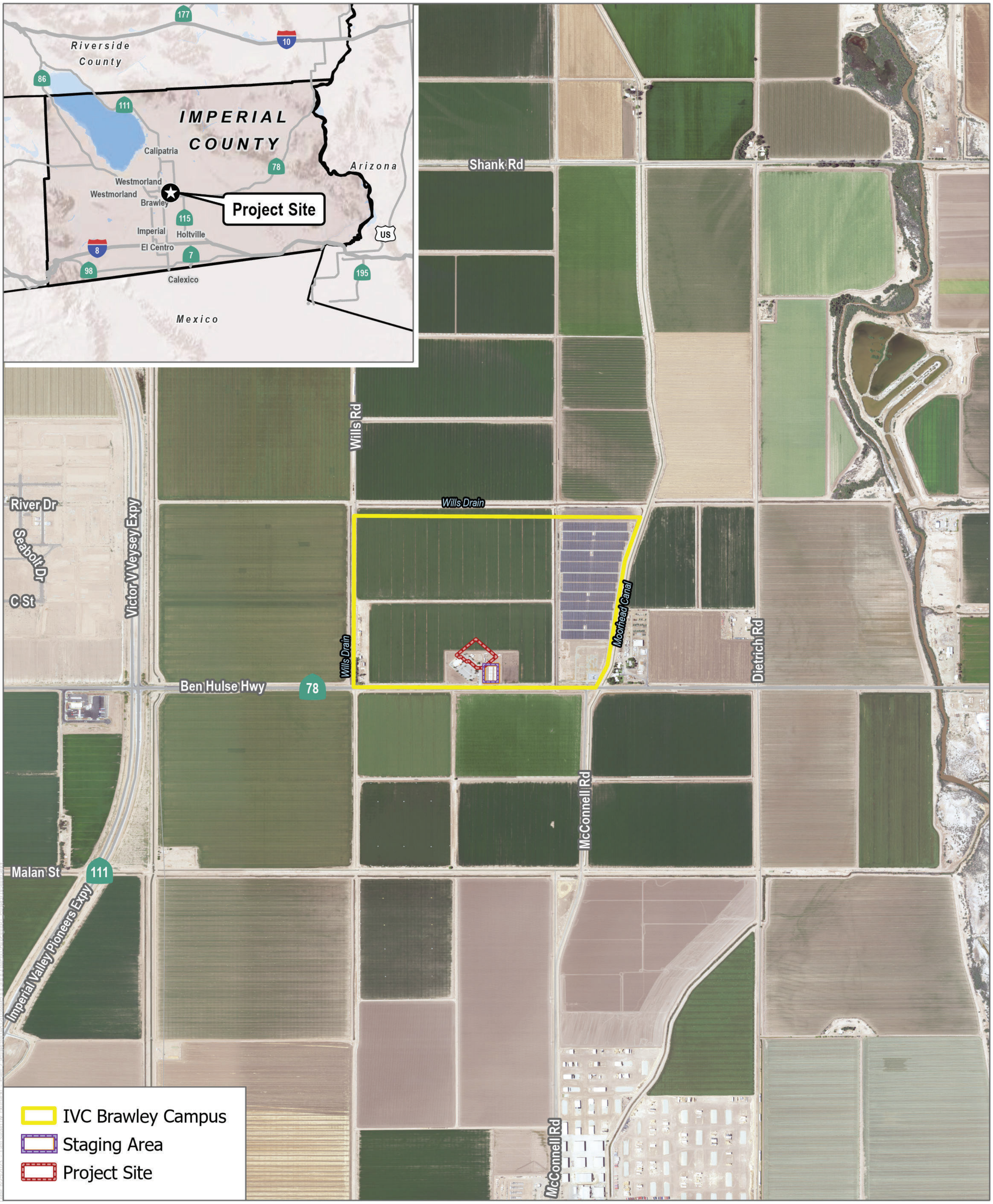
Attachment A
Figures



SOURCE: NAIP 2020, Open Streets Map 2019

DUDEK

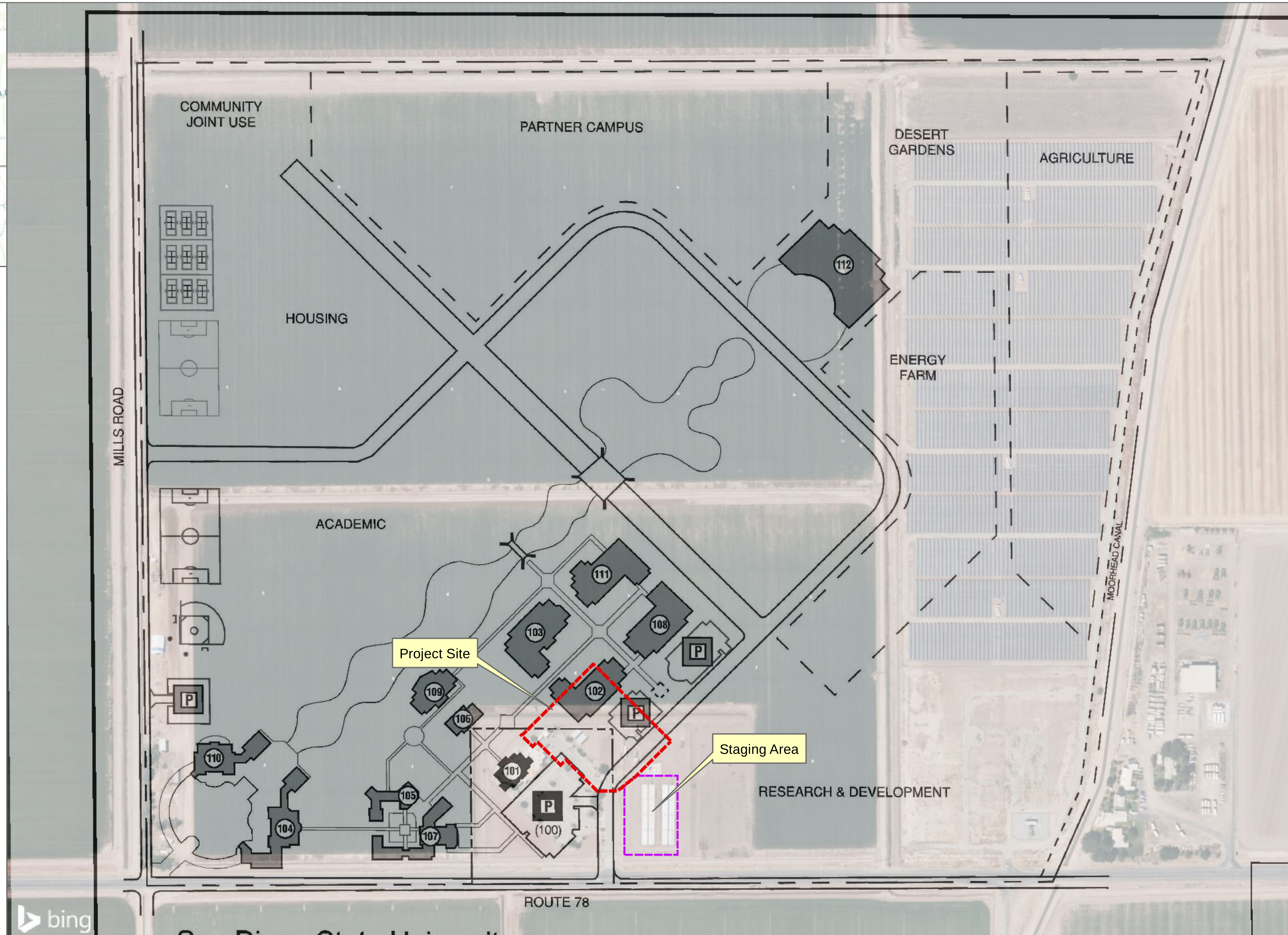
0 1,000 2,000
Feet

FIGURE 1

Regional/Campus Location

SDSU Brawley Sciences Building Project

Project Site
Staging Area



SOURCE: AERIAL-BING MAPPING SERVICE 2022; CAMPUS MASTER PLAN 2003

DUDEK 0 175 350 Feet

FIGURE 2

SDSU Brawley Project Site and Staging Area

SDSU Brawley Sciences Building Project

Attachment B

Air Quality and Greenhouse Gas Emissions CalEEMod Output Files

SDSU Brawley Construction_August Updates Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	SDSU Brawley Construction_August Updates
Construction Start Date	1/1/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.40
Precipitation (days)	4.80
Location	32.9802660660003, -115.48384214183959
County	Imperial
City	Unincorporated
Air District	Imperial County APCD
Air Basin	Salton Sea
TAZ	5601
EDFZ	19
Electric Utility	Imperial Irrigation District
Gas Utility	Southern California Gas
App Version	2022.1.1.18

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
University/College (4yr)	850	Student	1.50	36,900	61,119	61,119	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.50	24.6	9.77	12.2	0.02	0.37	25.8	26.2	0.34	2.61	2.96	—	2,237	2,237	0.08	0.05	1.44	2,256
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.04	1.71	16.2	16.3	0.02	0.75	25.8	26.2	0.69	2.74	3.43	—	2,779	2,779	0.11	0.05	0.04	2,797
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.08	1.93	7.27	8.51	0.02	0.28	18.1	18.4	0.26	1.85	2.11	—	1,610	1,610	0.06	0.04	0.44	1,622
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.20	0.35	1.33	1.55	< 0.005	0.05	3.30	3.35	0.05	0.34	0.39	—	266	266	0.01	0.01	0.07	269

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2024	1.50	1.25	9.77	12.2	0.02	0.37	25.8	26.2	0.34	2.61	2.96	—	2,237	2,237	0.08	0.05	1.44	2,256
2025	1.41	24.6	9.25	11.9	0.02	0.33	25.8	26.2	0.30	2.61	2.92	—	2,229	2,229	0.08	0.05	1.36	2,247
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	2.04	1.71	16.2	16.3	0.02	0.75	25.8	26.2	0.69	2.74	3.43	—	2,779	2,779	0.11	0.05	0.04	2,797
2025	1.38	1.15	9.29	11.2	0.02	0.33	25.8	26.2	0.30	2.61	2.92	—	2,192	2,192	0.09	0.05	0.04	2,208
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.08	0.90	7.27	8.51	0.02	0.28	18.1	18.4	0.26	1.85	2.11	—	1,610	1,610	0.06	0.04	0.44	1,622
2025	0.62	1.93	4.15	5.22	0.01	0.15	12.0	12.1	0.14	1.21	1.35	—	995	995	0.04	0.02	0.28	1,003
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.20	0.17	1.33	1.55	< 0.005	0.05	3.30	3.35	0.05	0.34	0.39	—	266	266	0.01	0.01	0.07	269
2025	0.11	0.35	0.76	0.95	< 0.005	0.03	2.18	2.21	0.03	0.22	0.25	—	165	165	0.01	< 0.005	0.05	166

3. Construction Emissions Details

3.1. Site Preparation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.70	1.43	13.7	12.9	0.02	0.65	—	0.65	0.59	—	0.59	—	2,064	2,064	0.08	0.02	—	2,071

Dust From Material Movement	—	—	—	—	—	—	1.63	1.63	—	0.78	0.78	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.19	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01	—	28.3	28.3	< 0.005	< 0.005	—	28.4
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.68	4.68	< 0.005	< 0.005	—	4.70
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.06	0.54	0.00	0.00	10.3	10.3	0.00	1.04	1.04	—	99.7	99.7	0.01	< 0.005	0.01	—
Vendor	0.01	0.01	0.24	0.11	< 0.005	< 0.005	4.55	4.56	< 0.005	0.46	0.47	—	193	193	< 0.005	0.03	0.01	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	0.14	0.14	0.00	0.01	0.01	—	1.47	1.47	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	2.64	2.64	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	0.03	0.03	0.00	< 0.005	< 0.005	—	0.24	0.24	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—

3.3. Grading (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.96	1.65	15.9	15.4	0.02	0.74	—	0.74	0.68	—	0.68	—	2,454	2,454	0.10	0.02	—	2,462
Dust From Material Movement	—	—	—	—	—	—	1.84	1.84	—	0.89	0.89	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.39	0.38	< 0.005	0.02	—	0.02	0.02	—	0.02	—	60.5	60.5	< 0.005	< 0.005	—	60.7

Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.0	10.0	< 0.005	< 0.005	—	10.1
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.08	0.72	0.00	0.00	13.7	13.7	0.00	1.39	1.39	—	133	133	0.01	< 0.005	0.02	—
Vendor	0.01	0.01	0.24	0.11	< 0.005	< 0.005	4.55	4.56	< 0.005	0.46	0.47	—	193	193	< 0.005	0.03	0.01	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.33	0.33	0.00	0.03	0.03	—	3.52	3.52	< 0.005	< 0.005	0.01	—
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.11	0.11	< 0.005	0.01	0.01	—	4.75	4.75	< 0.005	< 0.005	0.01	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	0.58	0.58	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	0.79	0.79	< 0.005	< 0.005	< 0.005	—

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—

3.5. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.36	1.13	9.44	10.1	0.02	0.37	—	0.37	0.34	—	0.34	—	1,801	1,801	0.07	0.01	—	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.36	1.13	9.44	10.1	0.02	0.37	—	0.37	0.34	—	0.34	—	1,801	1,801	0.07	0.01	—	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.93	0.77	6.43	6.88	0.01	0.25	—	0.25	0.23	—	0.23	—	1,227	1,227	0.05	0.01	—	1,231
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.17	1.26	< 0.005	0.05	—	0.05	0.04	—	0.04	—	203	203	0.01	< 0.005	—	204
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.11	0.11	1.98	0.00	0.00	21.3	21.3	0.00	2.15	2.15	—	244	244	0.01	0.01	0.91	—
Vendor	0.01	0.01	0.22	0.11	< 0.005	< 0.005	4.55	4.56	< 0.005	0.46	0.47	—	192	192	< 0.005	0.03	0.52	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.08	0.13	1.12	0.00	0.00	21.3	21.3	0.00	2.15	2.15	—	206	206	0.01	0.01	0.02	—
Vendor	0.01	0.01	0.24	0.11	< 0.005	< 0.005	4.55	4.56	< 0.005	0.46	0.47	—	193	193	< 0.005	0.03	0.01	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.08	0.96	0.00	0.00	14.3	14.3	0.00	1.45	1.45	—	151	151	0.01	0.01	0.27	—
Vendor	0.01	< 0.005	0.16	0.07	< 0.005	< 0.005	3.06	3.06	< 0.005	0.31	0.31	—	131	131	< 0.005	0.02	0.15	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.02	0.18	0.00	0.00	2.61	2.61	0.00	0.26	0.26	—	25.0	25.0	< 0.005	< 0.005	0.04	—
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.56	0.56	< 0.005	0.06	0.06	—	21.7	21.7	< 0.005	< 0.005	0.03	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.28	1.07	8.95	10.0	0.02	0.33	—	0.33	0.30	—	0.30	—	1,801	1,801	0.07	0.01	—	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	8.95	10.0	0.02	0.33	—	0.33	0.30	—	0.30	—	1,801	1,801	0.07	0.01	—	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.53	0.44	3.68	4.12	0.01	0.13	—	0.13	0.12	—	0.12	—	740	740	0.03	0.01	—	743
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.67	0.75	< 0.005	0.02	—	0.02	0.02	—	0.02	—	123	123	< 0.005	< 0.005	—	123
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.10	0.10	1.82	0.00	0.00	21.3	21.3	0.00	2.15	2.15	—	239	239	0.01	0.01	0.84	—
Vendor	0.01	0.01	0.21	0.10	< 0.005	< 0.005	4.55	4.56	< 0.005	0.46	0.47	—	189	189	< 0.005	0.03	0.52	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.11	1.03	0.00	0.00	21.3	21.3	0.00	2.15	2.15	—	202	202	0.01	0.01	0.02	—

Vendor	0.01	0.01	0.23	0.10	< 0.005	< 0.005	4.55	4.56	< 0.005	0.46	0.47	—	189	189	< 0.005	0.03	0.01	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.53	0.00	0.00	8.64	8.64	0.00	0.87	0.87	—	89.1	89.1	< 0.005	< 0.005	0.15	—
Vendor	< 0.005	< 0.005	0.09	0.04	< 0.005	< 0.005	1.85	1.85	< 0.005	0.19	0.19	—	77.6	77.6	< 0.005	0.01	0.09	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.10	0.00	0.00	1.58	1.58	0.00	0.16	0.16	—	14.8	14.8	< 0.005	< 0.005	0.02	—
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.34	0.34	< 0.005	0.03	0.03	—	12.9	12.9	< 0.005	< 0.005	0.02	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—

3.9. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	0.49	4.63	6.50	0.01	0.20	—	0.20	0.19	—	0.19	—	992	992	0.04	0.01	—	995
Paving	—	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.03	0.03	0.27	0.37	< 0.005	0.01	—	0.01	0.01	—	0.01	—	57.1	57.1	< 0.005	< 0.005	—	57.3
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.45	9.45	< 0.005	< 0.005	—	9.48
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.08	1.47	0.00	0.00	17.2	17.2	0.00	1.73	1.73	—	193	193	0.01	0.01	0.68	—
Vendor	0.01	0.01	0.21	0.10	< 0.005	< 0.005	4.55	4.56	< 0.005	0.46	0.47	—	189	189	< 0.005	0.03	0.52	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	0.98	0.98	0.00	0.10	0.10	—	10.1	10.1	< 0.005	< 0.005	0.02	—
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.26	0.26	< 0.005	0.03	0.03	—	10.9	10.9	< 0.005	< 0.005	0.01	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	0.18	0.18	0.00	0.02	0.02	—	1.67	1.67	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.05	0.05	< 0.005	< 0.005	< 0.005	—	1.80	1.80	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—

3.11. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	24.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.68	7.68	< 0.005	< 0.005	—	7.71
Architectural Coatings	—	1.41	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.27	1.27	< 0.005	< 0.005	—	1.28
Architectural Coatings	—	0.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.36	0.00	0.00	4.26	4.26	0.00	0.43	0.43	—	47.7	47.7	< 0.005	< 0.005	0.17	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	0.24	0.24	0.00	0.02	0.02	—	2.50	2.50	< 0.005	< 0.005	< 0.005	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	0.04	0.04	0.00	< 0.005	< 0.005	—	0.41	0.41	< 0.005	< 0.005	< 0.005	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	1/1/2024	1/5/2024	5.00	5.00	—
Grading	Grading	1/8/2024	1/18/2024	5.00	9.00	—
Building Construction	Building Construction	1/19/2024	7/29/2025	5.00	398	—
Paving	Paving	7/30/2025	8/27/2025	5.00	21.0	—
Architectural Coating	Architectural Coating	8/28/2025	9/25/2025	5.00	21.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	7.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	6.00	367	0.29

Building Construction	Forklifts	Diesel	Average	1.00	6.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	3.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	6.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	7.50	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	6.00	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	10.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	6.00	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT

Building Construction	—	—	—	—
Building Construction	Worker	15.5	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	6.00	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	12.5	18.5	LDA,LDT1,LDT2
Paving	Vendor	6.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	3.10	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	55,350	18,450	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	0.00	0.00	—
Grading	—	—	9.00	0.00	—
Paving	0.00	0.00	0.00	0.00	1.00

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
University/College (4yr)	1.00	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	457	0.03	< 0.005
2025	0.00	457	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	32.9	annual days of extreme heat
Extreme Precipitation	0.10	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A

Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	32.2
AQ-PM	34.7
AQ-DPM	10.2
Drinking Water	37.6
Lead Risk Housing	63.6
Pesticides	91.4
Toxic Releases	11.0
Traffic	5.41
Effect Indicators	—
CleanUp Sites	41.1
Groundwater	90.7
Haz Waste Facilities/Generators	27.1

Impaired Water Bodies	99.7
Solid Waste	95.3
Sensitive Population	—
Asthma	95.7
Cardio-vascular	79.7
Low Birth Weights	9.33
Socioeconomic Factor Indicators	—
Education	54.4
Housing	—
Linguistic	62.7
Poverty	71.1
Unemployment	97.1

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—

Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	2.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	19.2

Physically Disabled	42.3
Heart Attack ER Admissions	25.2
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	68.4
Elderly	33.9
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	1.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.8
Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—

2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	75.0
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Project dimensions provided by applicant. Consistent with August 2023 PD updates.
Construction: Construction Phases	Project-specific detail. CalEEMod construction phases scaled per total construction period provided by the applicant. Paving added consistent with August 2023 PD updates.
Construction: Dust From Material Movement	Per the project applicant, approximately 39,098 SF (0.895 acres) would require grading. Given that multiple passes are typically required, the CalEEMod default acreage was used for grading phase. No grading anticipated during the site preparation phase.
Construction: Trips and VMT	Vendor trips included.

Construction: On-Road Fugitive Dust	Assuming 95% of travel would be on paved roads.
Construction: Paving	41,297 SF (0.95 acres) of hardscape improvements. Assumed entirely asphalt pavement. Consistent with August 2023 PD updates.

SDSU Brawley Operations_August Updates Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	SDSU Brawley Operations_August Updates
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.40
Precipitation (days)	4.80
Location	San Diego State University, 560 CA-78, Brawley, CA 92227, USA
County	Imperial
City	Unincorporated
Air District	Imperial County APCD
Air Basin	Salton Sea
TAZ	5601
EDFZ	19
Electric Utility	Imperial Irrigation District
Gas Utility	Southern California Gas
App Version	2022.1.1.18

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
University/College (4yr)	850	Student	1.50	36,900	61,119	61,119	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Energy	E-10-B	Establish Onsite Renewable Energy Systems: Solar Power

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.18	7.47	18.3	23.7	0.03	0.96	0.00	0.96	0.96	0.00	0.96	87.1	4,245	4,332	8.96	0.05	0.14	4,571
Mit.	7.18	7.47	18.3	23.7	0.03	0.96	0.00	0.96	0.96	0.00	0.96	87.1	4,153	4,240	8.95	0.05	0.14	4,478
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	2%	2%	< 0.5%	3%	—	2%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.18	7.47	18.3	23.7	0.03	0.96	0.00	0.96	0.96	0.00	0.96	87.1	4,245	4,332	8.96	0.05	0.14	4,571
Mit.	7.18	7.47	18.3	23.7	0.03	0.96	0.00	0.96	0.96	0.00	0.96	87.1	4,153	4,240	8.95	0.05	0.14	4,478
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	2%	2%	< 0.5%	3%	—	2%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.07	0.99	0.17	0.22	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	87.1	931	1,018	8.83	0.02	0.14	1,246
Mit.	0.07	0.99	0.17	0.22	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	87.1	839	926	8.82	0.02	0.14	1,153
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	10%	9%	< 0.5%	6%	—	7%

Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.01	0.18	0.03	0.04	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	14.4	154	169	1.46	< 0.005	0.02	206
Mit.	0.01	0.18	0.03	0.04	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	14.4	139	153	1.46	< 0.005	0.02	191
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	10%	9%	< 0.5%	6%	—	7%

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	888	888	0.11	0.01	—	895
Water	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Waste	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Stationary	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	3,356
Total	7.18	7.47	18.3	23.7	0.03	0.96	0.00	0.96	0.96	0.00	0.96	87.1	4,245	4,332	8.96	0.05	0.14	4,571
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	888	888	0.11	0.01	—	895
Water	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Waste	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Stationary	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	3,356
Total	7.18	7.47	18.3	23.7	0.03	0.96	0.00	0.96	0.96	0.00	0.96	87.1	4,245	4,332	8.96	0.05	0.14	4,571
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	888	888	0.11	0.01	—	895
Water	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Waste	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Stationary	0.07	0.06	0.17	0.22	< 0.005	0.01	—	0.01	0.01	—	0.01	—	30.5	30.5	< 0.005	< 0.005	—	30.6
Total	0.07	0.99	0.17	0.22	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	87.1	931	1,018	8.83	0.02	0.14	1,246
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	147	147	0.02	< 0.005	—	148
Water	—	—	—	—	—	—	—	—	—	—	—	0.58	2.09	2.67	0.06	< 0.005	—	4.58
Waste	—	—	—	—	—	—	—	—	—	—	—	13.8	0.00	13.8	1.38	0.00	—	48.4
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Stationary	0.01	0.01	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.06	5.06	< 0.005	< 0.005	—	5.07
Total	0.01	0.18	0.03	0.04	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	14.4	154	169	1.46	< 0.005	0.02	206

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	795	795	0.10	0.01	—	802
Water	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Waste	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Stationary	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	3,356
Total	7.18	7.47	18.3	23.7	0.03	0.96	0.00	0.96	0.96	0.00	0.96	87.1	4,153	4,240	8.95	0.05	0.14	4,478
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	795	795	0.10	0.01	—	802
Water	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Waste	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Stationary	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	3,356
Total	7.18	7.47	18.3	23.7	0.03	0.96	0.00	0.96	0.96	0.00	0.96	87.1	4,153	4,240	8.95	0.05	0.14	4,478
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	795	795	0.10	0.01	—	802
Water	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7

Waste	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Stationary	0.07	0.06	0.17	0.22	< 0.005	0.01	—	0.01	0.01	—	0.01	—	30.5	30.5	< 0.005	< 0.005	—	30.6
Total	0.07	0.99	0.17	0.22	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	87.1	839	926	8.82	0.02	0.14	1,153
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	132	132	0.02	< 0.005	—	133
Water	—	—	—	—	—	—	—	—	—	—	—	0.58	2.09	2.67	0.06	< 0.005	—	4.58
Waste	—	—	—	—	—	—	—	—	—	—	—	13.8	0.00	13.8	1.38	0.00	—	48.4
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Stationary	0.01	0.01	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.06	5.06	< 0.005	< 0.005	—	5.07
Total	0.01	0.18	0.03	0.04	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	14.4	139	153	1.46	< 0.005	0.02	191

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Universit (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	888	888	0.11	0.01	—	895
Total	—	—	—	—	—	—	—	—	—	—	—	—	888	888	0.11	0.01	—	895
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	888	888	0.11	0.01	—	895
Total	—	—	—	—	—	—	—	—	—	—	—	—	888	888	0.11	0.01	—	895
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	147	147	0.02	< 0.005	—	148
Total	—	—	—	—	—	—	—	—	—	—	—	—	147	147	0.02	< 0.005	—	148

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	795	795	0.10	0.01	—	802
Total	—	—	—	—	—	—	—	—	—	—	—	—	795	795	0.10	0.01	—	802
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	795	795	0.10	0.01	—	802
Total	—	—	—	—	—	—	—	—	—	—	—	—	795	795	0.10	0.01	—	802
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	132	132	0.02	< 0.005	—	133
Total	—	—	—	—	—	—	—	—	—	—	—	—	132	132	0.02	< 0.005	—	133

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

University/College	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architect Coatings	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Total	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Total	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	0.58	2.09	2.67	0.06	< 0.005	—	4.58
Total	—	—	—	—	—	—	—	—	—	—	—	0.58	2.09	2.67	0.06	< 0.005	—	4.58

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Total	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Total	—	—	—	—	—	—	—	—	—	—	—	3.49	12.6	16.1	0.36	0.01	—	27.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	0.58	2.09	2.67	0.06	< 0.005	—	4.58
Total	—	—	—	—	—	—	—	—	—	—	—	0.58	2.09	2.67	0.06	< 0.005	—	4.58

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Total	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Total	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	13.8	0.00	13.8	1.38	0.00	—	48.4
Total	—	—	—	—	—	—	—	—	—	—	—	13.8	0.00	13.8	1.38	0.00	—	48.4

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Total	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Total	—	—	—	—	—	—	—	—	—	—	—	83.6	0.00	83.6	8.36	0.00	—	292
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

University/College	—	—	—	—	—	—	—	—	—	—	—	13.8	0.00	13.8	1.38	0.00	—	48.4
Total	—	—	—	—	—	—	—	—	—	—	—	13.8	0.00	13.8	1.38	0.00	—	48.4

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14	0.14
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
University/College (4yr)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3,356
Total	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	3,356
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3,356
Total	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	3,356
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.01	0.01	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.06	5.06	< 0.005	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.07
Total	0.01	0.01	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.06	5.06	< 0.005	< 0.005	—	5.07

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3,356
Total	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	3,356
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3,356
Total	7.18	6.54	18.3	23.7	0.03	0.96	—	0.96	0.96	—	0.96	—	3,345	3,345	0.13	0.03	—	3,356
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.01	0.01	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.06	5.06	< 0.005	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.07
Total	0.01	0.01	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.06	5.06	< 0.005	< 0.005	—	5.07

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipme Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
University/College (4yr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	55,350	18,450	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)

University/College (4yr)	1,235,233	262	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO_2 and CH_4 and N_2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
University/College (4yr)	1,106,361	262	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
University/College (4yr)	1,819,935	2,780,220

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
University/College (4yr)	1,819,935	2,780,220

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
University/College (4yr)	155	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
University/College (4yr)	155	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
University/College (4yr)	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
University/College (4yr)	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
University/College (4yr)	Stand-alone retail refrigerators and freezers	R-134a	1,430	< 0.005	1.00	0.00	1.00
University/College (4yr)	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
University/College (4yr)	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
University/College (4yr)	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
University/College (4yr)	Stand-alone retail refrigerators and freezers	R-134a	1,430	< 0.005	1.00	0.00	1.00
University/College (4yr)	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Emergency Generator	Diesel	1.00	24.0	80.0	166	0.73

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	32.9	annual days of extreme heat
Extreme Precipitation	0.10	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A

Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	32.2
AQ-PM	34.7
AQ-DPM	10.2
Drinking Water	37.6
Lead Risk Housing	63.6
Pesticides	91.4
Toxic Releases	11.0
Traffic	5.41
Effect Indicators	—

CleanUp Sites	41.1
Groundwater	90.7
Haz Waste Facilities/Generators	27.1
Impaired Water Bodies	99.7
Solid Waste	95.3
Sensitive Population	—
Asthma	95.7
Cardio-vascular	79.7
Low Birth Weights	9.33
Socioeconomic Factor Indicators	—
Education	54.4
Housing	—
Linguistic	62.7
Poverty	71.1
Unemployment	97.1

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—

Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	2.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0

Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	19.2
Physically Disabled	42.3
Heart Attack ER Admissions	25.2
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	68.4
Elderly	33.9
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	1.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.8
Traffic Density	0.0
Traffic Access	23.0

Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	75.0
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Project-specific dimensions provided by applicant. Consistent with August 2023 PD updates.
Operations: Road Dust	—

Operations: Vehicle Data	Mobile trips associated with the proposed 850 FTE students previously analyzed and approved with the 2003 PEIR for the Campus Master Plan. Operational emissions for the proposed project are only related to the proposed building envelope/site footprint.
Operations: Energy Use	Per project applicant, no natural gas proposed for the project.